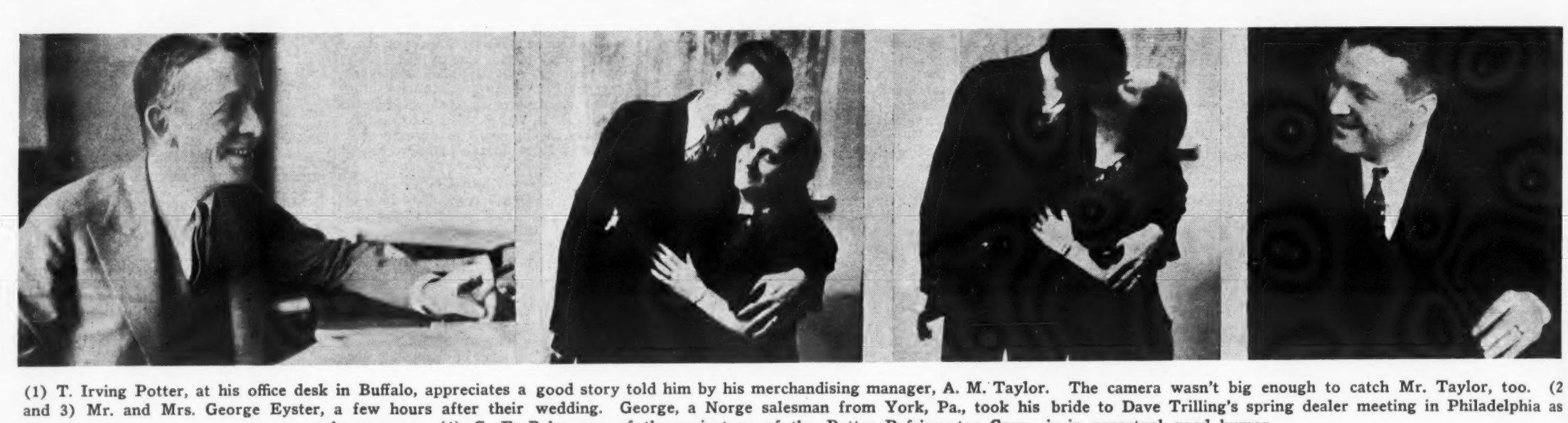
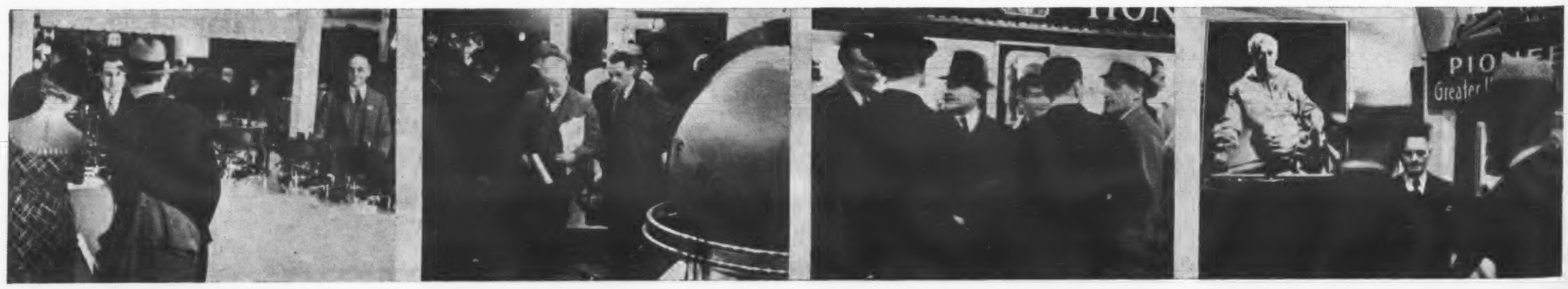
Dealer Meetings & Oil Burner Show Catch Camera's Eye

(1) Dick Cooper's attention is momentarily distracted as he starts to award recognition pins to deserving cohorts. (2, 3, 4, and 5) Jean De Jen, G-E contest manager, is an amateur magician of considerable proficiency. He entertained the Cooper dealers with Mystic Feats of Legerdemain and Prestidigitation. (6) P. B. Zimmerman speaks.



(1) T. Irving Potter, at his office desk in Buffalo, appreciates a good story told him by his merchandising manager, A. M. Taylor. The camera wasn't big enough to catch Mr. Taylor, too. (2 and 3) Mr. and Mrs. George Eyster, a few hours after their wedding. George, a Norge salesman from York, Pa., took his bride to Dave Trilling's spring dealer meeting in Philadelphia as a honeymoon. (4) G. E. Bahr, one of the mainstays of the Potter Refrigerator Corp., is in perpetual good humor.

(1) C. J. Swan, Detroit Lubricator's affable and astute manager of sales, listens with crossed fingers to another salesman's story. (2) An exhibit of parts made by Detroit Lubricator drew a steady stream of visitors at the Philadelphia oil burner show. (3) Close-up of Mr. Swan. (4) The same Mr. Swan, rear elevation.



(1) Mr. and Mrs. Prospect take in the ABC exhibit at the Philadelphia oil burner show. (2) Factory representatives leave the Quiet May booth to go out and hunt up dealers. (3) The Minneapolis-Honeywell exhibit was always packed with visitors. (4) A portrait of Gar Wood as the Speed Boat King attracted attention at the Gar Wood booth.

(1) This visitor to the oil burner show wants to know "what's inside" the General Electric oil furnace. (2) This gentleman is watching the Super Oil Heater automatic vaporization display in action. (3) William Dorman (left) of ABC talks business with a dealer. (4) Ditto, Advertising Manager George Rakovan (right) of Cleveland Steel Products.

THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

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NEWS ABOUT DEALERS

Retailers in Indiana Cities Say Public Is Buying Early

By Elston D. Herron

It was 11 p. m. when we arrived in Richmond, Ind. (population 30,000), but before turning in for the night, we decided to take a fast walk through several blocks of the business district and spot a few dealerships to visit the next morning.

As this reporter walked back toward the hotel a half-hour later, he was convinced of one thing: that if good window displays can make people conscious of a product, Richmond folk must be doing plenty of thinking about electric refrigerators.

Practically all of this town's business section is spread along seven or eight blocks of one straight avenue—East Main St. There is at least one refrigeration dealership in every square, and each had a good refrigerator display in its windows. In one display were 12 models, in another we saw seven.

Richmond, Ind., Dealers

Two biggest operators are the General Electric and Frigidaire dealers, and each admits that the other is his toughest competition. Both keep a staff of outside men working on refrigeration the year 'round.

One of our first calls was on the G-E man—C. A. Kleinknecht, proprietor of the Richmond Electric Co., handling refrigerators, ranges, radios, dishwashers, and lighting fixtures. During our first few minutes there, we gathered that Mr. Kleinknecht thinks appliance merchandising is a pretty good business to be in.

He is confident of doing a good business this year, for although Richmond's condition isn't particularly good, neither is it bad (chiefly because its industries are diversified—National Automatic Tool Co., International Harvester seeding machine plant, Belden wire factory, Starr refrigerator and piano company, some lawmower and casket factories).

Mr. Kleinknecht, like other Richmond dealers and those interviewed in Illinois recently, expects a good year chiefly because the townspeople have shown a high degree of refrigeration consciousness. "It's just that they're ready to buy," we were told.

Last year, Richmond Electric Co. sold 96 household refrigerators and five commercial units. This year, it

(*Continued on Page 2, Column 1*)

Food Retailers Will See Movie on Commercial

DAYTON—With an original six reel sound motion picture starring the nation's headliners in the field of food and beverage preparing and retailing, Frigidaire Corp. last Saturday opened its 1934 promotional campaign in the commercial refrigeration field.

Six crews of factory executives will conduct, during April and May in 200 cities in all sections of the United States, food and beverage industries meetings which a total of more than 200,000 business men active in the food retailing industry are expected to attend.

The film stars such personalities as Oscar, of the Waldorf; John P. Harding, the restaurateur; Max O. Cullen, manager of the merchandising department of the National Livestock and Meat Board; and William B. Margerum, president of the National Association of Meat Dealers.

"Titled 'We're in the Money' the film pictures the methods of merchandis-

(*Concluded on Page 13, Column 5*)

G-E Increases Salaries & Hourly Rates 10%

SCHENECTADY, N. Y.—A 10 per cent increase to all General Electric employes receiving $2,600 per year or less, either on salary or hourly rate, effective April 1, was announced March 30 by Gerard Swope, president of the company.

Ball Is Elected Head of Grunow Executive Group

Coit Retires; Grunow and Ball Increase Stock Holdings

CHICAGO—George Ball of Muncie, Ind., whose Ball Mason jar manufacturing enterprise has made him millions, is now chairman of the executive committee of General Household Utilities Co.

J. Clark Coit, formerly chairman of the board, has retired and moved to Florida, where he will reside permanently with his wife, who is in ill health.

Following the retirement of Mr. Coit, Mr. Ball increased his holdings in General Household Utilities, and the new title of "chairman of the executive committee" was created for him. Mr. Ball is also a director of

(*Concluded on Page 16, Column 5*)

G-E Submits New TVA Model; Other Firms Revise Prices

WASHINGTON, D. C. — General Electric Co. has submitted an electric refrigerator embodying "a new approach in design" (a combined refrigerator and range) and Kelvinator Corp., Leonard Refrigerator Co., and Frigidaire Corp. have revised their prices on models which they submitted, David E. Lilienthal, president of the Electric Home & Farm Authority reported last week.

When manufacturers first offered models for promotion by the Electric Home and Farm Authority some weeks ago they were rejected by the directors of the EH & FA because the "price wasn't right."

Mr. Lilienthal also declared last week that Kelvinator Sales Corp. ex-

(*Concluded on Page 16, Column 1*)

Starr Adds Men to Factory, Sales Staff

RICHMOND, Ind.—Two hundred men are now being employed in manufacture of refrigeration equipment by the Starr Co. here, and daily production on both household and commercial products is 100 per cent greater than at this time last year.

As a part of its spring sales promotion program, several additional factory representatives have been appointed to contact Starr dealers and give them personal assistance in sales and advertising programs, according to Hobart Wiggins, refrigeration sales manager.

In the Starr-Freeze line of domestic refrigerators this year are seven

(*Concluded on Page 13, Column 1*)

78 Dealers Are Guests At Grunow Factory

CHICAGO — Seventy-eight dealers from Iowa and Nebraska trekked to Chicago last week, and were the guests of General Household Utilities Co., Friday, March 30.

These dealers are connected with the Sidles-Duda-Myers distributing organization of Omaha, Lincoln and Des Moines.

In the afternoon they visited the General Household Utilities plants,

(*Concluded on Page 16, Column 1*)

Wurlitzer Organizes Export Division

NORTH TONAWANDA, N. Y.—Wurlitzer Export Corp., with headquarters at 85 Beaver St., New York City, has been formed by The Rudolph Wurlitzer Mfg. Co. to handle all its foreign trade.

The new export firm is in charge of H. A. Sillcox, long identified with foreign sales development on radio and refrigeration equipment. A showroom will be maintained for the convenience of foreign buyers passing through New York City and stock will be carried in New York for immediate delivery to steamers.

1934 Directory Announcement

"How many electric refrigerators have been sold to date by each of the leading manufacturers? What was the ranking of the first 10 companies for 1933?"

The above question, with some variations, has been asked by numerous subscribers recently. Unfortunately, we have been unable to answer it. While we have a pretty good idea regarding the relative standing of the leading companies, in terms of 1933 sales, we have no means of verifying our figures and therefore cannot publish the list.

This question, however, represents about the only statistical information about the electric refrigeration industry, in popular demand, which is not answered by the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

The new book will contain *six hundred ninety-two* (692) pages of facts and figures. The statistical section alone occupies 186 pages. All available data regarding production, sales, and stocks are tabulated in detail and charted to show the ups and down of the industry from its beginning to the end of 1933.

Another one hundred ten (110) pages of the book are devoted to *specifications*—detailed data regarding *every model* of *every make* of household and commercial unit on the market.

One hundred and ninety-six (196) pages are required for the *classified products* section listing all products and services sold by, or used by, the refrigeration industry.

Seventy-two (72) pages of the book are occupied by the *geographical* section in which names and addresses of all manufacturers are given, together with executive personnel, telephone numbers, branch offices, and products sold.

The *trade name* section, in which all trade names of refrigeration products are identified with the product and name and address of the manufacturer, takes up thirty-two (32) pages, while a simple *alphabetical* index of all the companies listed uses another twenty-four (24) pages.

In the back of the book will be found a *review* section in which important events and developments in the industry are reviewed by the editors of ELECTRIC REFRIGERATION NEWS. Altogether, the 1934 volume is the most complete compendium of information about the commercial phases of refrigeration ever compiled.

Sorry we can't answer that question about the ranking of the leading manufacturers, but if you want to know *anything else* about this industry, consult the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK. Right now, the job is being delivered from the printer to the bindery. Books will be ready in a few days. Those who have paid-in-advance orders on file will receive their copies first. If you haven't entered your order, do so at once. It certainly is a big three dollars' worth.

Refrigeration Valves & Fittings Code Hearing April 9

WASHINGTON, D. C.—Public hearings on the proposed code of fair competition for the refrigeration valves and fittings manufacturing industry will open at 10 a. m. Monday, April 9, in the ballroom of the Powhatan hotel here.

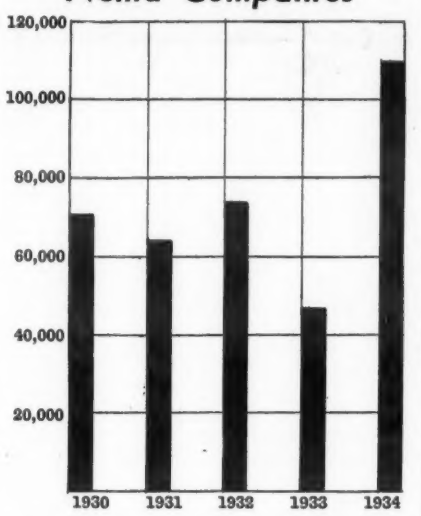
Any parties wishing to be heard at the hearing must file a written or telegraphic request before noon on Saturday, April 7, with the Administrator, Room 4060, Department of Commerce Building, it has been announced by L. S. Horner, deputy administrator.

The proposed code, which is being submitted by the Refrigeration Valves and Fittings Manufacturing Association, is supplemental to the basic code of the fabricated metal products manufacturing and metal finishing industry. The supplemental code covers

(*Concluded on Page 16, Column 2*)

First Two Months Unit Sales Set New Record

Jan.-Feb. Sales of Nema Companies



This bar chart shows combined Nema unit sales for January and February over a 5-year period.

Majestic to Be Sold By Receiver April 16

CHICAGO—By order of the United States District Court for the northern district of Illinois, Receiver-in-Bankruptcy Frank M. McKey will put up for sale, as a whole or in parcels, the entire assets of the Grigsby-Grunow Co., manufacturers of Majestic radios and refrigerators. The sale will take place before Referee Edmund D. Adcock at 10 o'clock in the morning of Monday, April 16, in Room 1201, 100 W. Monroe St., Chicago.

A decision to put the Grigsby-Grunow Co. on the auction block was made, it is understood, after negotiations with Fairbanks-Morse to take over the firm failed to materialize.

The property to be sold consists of

(*Concluded on Page 16, Column 1*)

Rex Plant Producing 750 Cabinets Daily

CONNERSVILLE, Ind.—With 1,017 men now on its payroll, the Rex Mfg. Co. here is producing from 750 to 800 refrigerator cabinets per day, and plans are being made for an immediate stepup in production.

By the middle of April, the company will have a daily output of 1,000 cabinets, and 250 more men will have been added to the force on the production lines, according to Edgar Myers, sales manager.

Rex manufactures cabinets for Apex, Crosley, Potter, and Stewart-Warner refrigerators. Crosley, however, is making about 25 per cent of its own cabinets this season.

Indications now are that Rex will remain on peak production schedules at least until June 1, and if its four accounts reach the quotas they have set for themselves, the company will

(*Concluded on Page 16, Column 4*)

Apollo Orders 40 Cars Of Crosleys

CINCINNATI—Biggest single order for electric refrigerators ever received by the Crosley Radio Corp. arrived here last week from the Apollo Radio Co. of Newark—an order calling for immediate shipment of 40 carloads of Crosley Shelvador and Tri-Shelvador electric refrigerators. H. E. Richardson, assistant in charge of sales to President Powel Crosley, Jr., took the order.

This order just tops the previous record—38 carloads from the Chanslor-Lyon Co. of San Francisco. Other trainload orders now being filled by the refrigerator division of the Crosley Radio Corp., according to Mr. Richardson, will be shipped as follows:

Oklahoma City, 25 carloads; Ft. Worth, Tex., 16 carloads; Charleston, W. Va., 16 carloads; Chicago, 14 carloads; New York City, 12 carloads; Baltimore, 10 carloads; Omaha, 10 carloads, and Dallas, 10 carloads.

Nema Group Sells Total Of 109,521 Units During January & February

DETROIT — Evidence that the household electric refrigeration industry is on the way toward another banner year is shown by the record-breaking sales volume reported for January and February by the Refrigeration Division of the National Electrical Manufacturers Association (Nema).

Combined sales for January and February reached a total of 109,521 units, a figure which is more than double the volume for the same two months period of 1933, when 46,773 household refrigerators were sold. In no previous year have January and February sales exceeded the 75,000 mark.

World sales of household refrigerators by 16 Nema companies amounted to 34,514 units in January with domestic sales reported at 29,578. During February 15 Nema companies sold a

(*Concluded on Page 14, Column 3*)

Bureau Estimates 82,439 Units Sold in February

NEW YORK CITY—Sales of 82,439 household electric refrigerators by industry manufacturers in February, 1934, shattered all previous records for that month, according to reports released by the Electric Refrigeration Bureau of the Edison Electric Institute. Bureau estimates showed sales of 35,394 in February, 1933, and 53,693 in February, 1931, the previous high record year.

Sales for January and February combined totaled 117,651 units, or 116.4% of the quota set by the Bureau for the two-months period. Thirty-

(*Concluded on Page 13, Column 2*)

Kelvinator Ships 75,885 Units During Six Months Period

DETROIT, April 3. — Kelvinator Corp. reported today that March shipments of 30,009 units brought the total shipments for the first six months of the company's present fiscal year up to 75,885 units compared with 37,084 for last year, and 42,383 units shipped in the six months between Oct. 1, 1930, and March 31, 1931, which had been the best previous first half.

The March shipment record, which compares with a total of 11,530 units shipped from the factory in the cor-

(*Concluded on Page 13, Column 3*)

Fedders Manufactures Steel Beer Kegs

(*See Illustration on Page 18*)

BUFFALO—Steel beer kegs have just been added to the line of products manufactured by Fedders Mfg. Co., according to O. W. Gregg, sales manager for the newly formed keg division.

The new keg is actually a "keg within a keg," with dead air cells between the inner and outer shells to insulate the beer and reduce temperature rises of the beer when in transit

(*Concluded on Page 16, Column 3*)

4 District Representatives Named for Major Line

CHICAGO—Four new factory district sales representatives have been appointed for the Major line of electric refrigerators, it has been announced by H. F. MacGrath, vice president in charge of sales of the Major Appliance Corp.

R. R. Dwyer, formerly with the Gurney Refrigerator Co., has been appointed West Coast manager; J. Heiman, formerly connected with the Leonard distributing organization in Minneapolis, will be northwest manager; J. B. Church, formerly assistant sales manager for Dayton Refrigerator Co., will cover Illinois, Indiana, and Wisconsin; and B. G. Paylor will handle the state of Texas.

NEWS ABOUT DEALERS

(*Continued from Page 1, Column 1*)

is sure it will sell twice as many domestic models, and 20 commercial jobs.

Mr. Kleinknecht pointed out that he has real basis for believing that refrigeration-minded Richmond will buy in '34.

"Last year, when things were worse than they are now," he said, "654 domestic and commercial units went on the power lines. Now, my salesmen (three household) have just finished a survey of 40 per cent of Richmond's entire population, in which they found that 76 per cent of those families not now using an electric refrigerator will choose that as the next appliance they buy."

Larger Models

The store has sold 11 refrigerators since the first of the year, most of them being 7-cu. ft. Monitor Top models. And the commercial salesman has sold two compressors and General Electric-Russ beer coolers to beverage establishments, and a commercial condensing unit to a grocery store.

Store traffic has been good in the G-E dealership this season, and Mr. Kleinknecht is planning to step it up still more by using twice as much newspaper advertising as last year.

Current feather in this dealer's cap is a sale of $2,350 worth of equipment, made last week to the municipally owned power company for its new model kitchen.

The utility bought a Monitor Top refrigerator, Hotpoint range, G-E dishwasher, a water heater, and equipment for cooling the kitchen. The cooling system includes a three-ton compressor, two wall-type cooling units, and one floor-type unit.

Everywhere we went, we heard that this power company is the refrigeration dealers' best friend, for it gives power rates (five cents per kwh. on first 50 kwh's., 2½ cents on all over 50) on all electricity consumed by homes having an electric refrigerator. Otherwise, straight lighting rates apply, regardless of what appliances are installed.

It sells no appliances, but offers free display space to all dealers, and will have an economist giving demonstrations of appliances in the new kitchen. Besides, she will call at the homes of new refrigerator owners, and advise the housewives on proper use of electric refrigeration.

Only company in Richmond selling nothing but refrigeration is Electric Service, Inc., headed by H. R. Marlatt, for nine years a refrigerator dealer, for the last three with Frigidaire.

"The town is sold on electric refrigeration," he said. "People are out shopping now, because they know that with the utility's low current rate to refrigerator users, it's extravagant *not* to buy this season. A refrigerator is the biggest money saver they can invest in—it can be operated for 50 to 75 cents a month."

In 1933, this dealership sold 236 Frigidaires, some of them outside of Richmond (in Union and Wayne counties). It made 18 commercial installations in grocery stores, confectioneries, and meat markets, and sold 13 beer coolers.

3 Air-Conditioning Installations

In addition, it made three air-conditioning installations—a 10-ton system in the main room of the Second National Bank, a 3-ton system in the cheese room of the Harris Produce Co., and a 1½-ton system in offices of the Beebe Glove Co.

"We expect to better last year's household refrigeration business by 50 per cent," said Mr. Marlatt, "but can't make a prediction on commercial sales because the replacement market is about all that's left here. Business establishments are picking up, though, so we expect a good volume. The CWA has helped a lot of stores that are commercial refrigeration prospects.

"Furthermore, I think we'll do $15,000 worth of air-conditioning business, mostly to stores and offices, because they're finding that air conditioning attracts customers. And I expect to make one or two installations in homes."

In Richmond, he told us, are about 1,600 Frigidaire installations—including both household and commercial (approximately 1,000 of the former).

So far this season, he has sold 27 domestic refrigerators, one-fourth of them for cash. And he sold an air-conditioning system, several days before we called, for installation in some offices of the power company, and a water-cooling system for the main floor of the utility.

Likes Seth Parker Stunt

Frigidaire's offer of free Seth Parker booklets, via its current broadcasts from the schooner *Seth Parker*, has given Mr. Marlatt a prospect traffic the like of which he has never seen before. Said he: "It's the best stunt ever. We've had so many people coming in after books that I'm afraid to leave the store."

Reviewing some of his statements, the dealer remarked again that the community's refrigeration consciousness is what makes his outlook so bright this year, and said, "Competition has made the town this way. There are so many dealers here, all after business, that people can't get away from hearing about refrigeration."

He believes there will be 1,000 household refrigerators sold in Richmond in 1934.

Public Buying Early

Norge dealer in Richmond is the Duning Furniture Co., headed by Carl H. Duning. The store has no canvass force, but depends on store traffic for its prospects, and follows them up after they have shown an interest in buying.

The company sold 50 Norges last year, and expects to sell 85 this season. Four have already been sold. Store traffic has been better than usual lately, and people have shown an unusually keen interest in refrigeration.

Mr. Duning attributes this to the public's arrival at the conclusion that electric refrigeration is "more of a money-saving necessity than a luxury," rather than to any great pickup in the town's economic condition, which might give people extra money to spend.

He hopes someday to have a specialty selling setup for his refrigeration business, but says that at present he hasn't the funds to push refrigeration as a major item and start merchandising it through an outside selling organization.

Two Lines Hard to Handle

Last year, the store handled Grunow, also, but found it unprofitable to sell the two lines against each other. Said Mr. Duning:

"To talk up one make was to talk down the other, so we were hurting sales of both. We finally dropped Grunow, and our Norge sales jumped right away."

In his opinion, the NRA hasn't helped Richmond much, and while the CWA has put money in the pockets of clothiers, grocers, etc., it has been of little aid to furniture and appliance dealers who have only large items to sell.

"No one sales argument is consistently a 'closer' for us," Mr. Duning said. "Richmond people want electric refrigeration already, so when they get the money they shop around, and finally buy the make whose total advantages appeal to them most."

Handles Crosley and Kelvinator

It was the Holthouse Furniture Store which had 12 refrigerators on display in its windows—seven Kelvinators and five Crosleys. In charge of refrigeration selling is S. J. Holthouse, son of Proprietress J. B. Holthouse.

This is the store's first season with Kelvinator, its third with Crosley. Last year, it sold 65 Crosleys, and expects to move 125 of both makes in 1934.

"It isn't because of the slight increase in reemployment by the town's factories that we're optimistic," Mr. Holthouse explained. Its just because a good many people here are drawing more pay as a result of the NRA, and are sure of their jobs again.

"We will have two outside men on refrigeration this year, and we are doubling our newspaper advertising. We have had a bigger store traffic on refrigeration this year than ever before, and the number of good prospects is unusually large."

He told us that the economy feature of electric refrigeration seems to be of prime interest to prospects, and that they are also showing quite an interest in cabinet styling—considerably more than last year.

Mr. Holthouse wishes his distributor would hurry up and send him some deluxe models. Several prospects have already come in to see the food filing system of the deluxe jobs, featured in national advertising.

The store will handle Kelvinator commercial equipment this year, but is still looking for a good man who can sell it and handle all of that part of the business.

Three Crosley Dealers

For some reason or other, there are three Crosley refrigerator dealers in Richmond—two besides the Holthouse store, and all within a few blocks of each other. Two of the Crosley men said they didn't know why there are three, and the third replied smilingly that "it's just one of those things."

Our next visit was made at the Weiss Furniture Store, which handles Grunow and Crosley. It has no outside salesmen, but does send a man out to contact known prospects.

In '33, this dealership sold 12 Grunows and 46 Crosleys. Only deluxe Grunows are handled, and the Crosley line is used instead of the lowest-priced Grunow models.

"We expect to sell another dozen Grunows this year, and about 25 Crosleys," said Lewis Tangeman.

"We think we'll sell fewer Crosleys this year than last because this store

(*Continued on Page 4, Column 1*)

1927 General Electric introduced the first refrigerator with a **2 YEAR GUARANTEE**

1931 G-E Monitor Top the first electric refrigerator to give a **3 YEAR GUARANTEE**

1932 Unparalleled G-E Performance made possible the first **4 YEAR SERVICE PLAN**

NOW 5 YEARS PROTECTION

FOR ONLY $1 A YEAR!

With a G-E Monitor Top refrigerator, purchasers get the standard 1 year warranty . . . PLUS *4 years additional protection on the sealed-in-steel mechanism for only $5.*

•

The mechanism represents about 70% of the buyer's investment in any electric refrigerator. Peerless performance of the G-E Monitor Top has made it possible for General Electric to protect that investment 5 Years for only $1 a year! Should the sealed-in-steel mechanism fail within that time it will be replaced without further cost.

Trouble-free performance at low cost won the G-E Monitor Top mechanism universal recognition as the standard of excellence for household refrigeration. Now, to this matchless mechanism has been added brilliant new beauty and distinguished cabinet styling. New 1934 Monitor Top models are the finest and most attractive refrigerators General Electric ever built. And the new G-E Flat Top model, carrying the standard 1-year warranty, is the smartest styled cabinet among all popular priced refrigerators.

With the new 5-*Year Protection Plan* and with new refrigerator models that are being talked about as the style sensations of 1934, General Electric again steps ahead with an even greater profit opportunity for G-E dealers. If you are not already a General Electric refrigerator retailer, write or wire for details of the G-E franchise. General Electric Company, Electric Refrigeration Department, Section DF41, Nela Park, Cleveland, Ohio.

G-E FEATURES

- *So quiet in operation you can scarcely hear it.*
- *Uses less current and gives full refrigerating capacity for even unusual demands.*
- *Sturdy All-Steel cabinets with glistening white enamel exterior, or gleaming porcelain both inside and out.*
- *Sliding shelves, adjustable in height, giving more conveniently usable storage space.*
- *Stainless steel freezing chamber, cannot chip or rust, freezes more ice faster.*
- *Convenient temperature control for fast or slow freezing, refrigeration uninterrupted when defrosting.*
- *Automatic interior lighting illuminates entire interior when door opens.*
- *Auxiliary foot-pedal door opener.*
- *Door gaskets of cushiony live-rubber, easily replaceable.*
- *New modern hardware.*

GENERAL ELECTRIC *All-Steel Refrigerator*

NEWS ABOUT DEALERS

(*Continued from Page 2, Column 5*)

is part of an estate which is to be settled next March. We don't know positively what will be done with it, so can't offer the long payment terms on merchandise that we have in the past, and long-term payments were a powerful sale-maker for us on refrigeration."

"Then why do you think you'll sell as many Grunows? Aren't they sold the same way?" we queried.

"No. People who are interested in Grunow are generally of the type who can pay cash. The lower-priced Crosleys attract persons with smaller incomes—the ones who can and will buy only if they have a long time to make the payments."

Store traffic has been better than usual in this dealership since the first of the year, and Mr. Tangeman thinks this "buying interest" is the result of an improved spirit on the part of the public rather than an actual increase in funds.

Radio is the principal business of the Charles O. Snyder store, but it handles Crosley refrigerators, too.

Heretofore, no outside salesman has been used on refrigeration, but store traffic this year has been so good that Manager H. P. Suman believes the public's interest warrants his employing someone to do door-to-door selling also.

So he is going to hire a woman to sell refrigerators, and expects to move 25 by the end of the season. "Women have done a better job than men in selling washers for us, so we're going to try the same thing on refrigeration," he said.

We talked for a few minutes with G. S. Patton, member of the staff of the Starr Sales Corp., which handles wholesale operations in the western half of Ohio and the eastern half of Indiana for the Starr Co., manufacturer of Starr Freeze household and commercial refrigeration in Richmond.

He told us that his company is placing greatest emphasis on sales of commercial equipment in its territory this year because the market for replacement business in the commercial field seems especially good now.

At the Starr Co. factory, we visited with Harry Gennett, president; Clarence Gennett, treasurer; and Hobart Wiggins, refrigeration sales manager.

They were in good spirits about the refrigeration business they are doing at present and seemed particularly pleased with their volume of orders from foreign countries. Demand for commercial equipment, from this and other countries they said, is greater than ever before.

Indianapolis Dealers See New Public Optimism

Distributors and dealers we visited in Indianapolis all expect to do a much better business in 1934 than they did in 1933.

And in each case, the reason given for these expectations is the same—it isn't especially the moderate upturn in the community's industrial activity, but rather the change in public spirit, inspired largely by the New Deal, which has been such that purse strings have loosened noticeably.

First place we heard this story in Indianapolis was the Frigidaire dealership of H. A. Shaffer, 927 N. Meridian St.

In '33, Mr. Shaffer and his seven salesmen sold 146 per cent of quota; this season, they expect to go 32 per cent over that. Furthermore, they anticipate a good year on home and office room cooling. Household refrigerator advertising will be doubled.

Ask Mr. Shaffer something about his store traffic, and quick as scat he'll start singing the praises of Frigidaire's Seth Parker broadcasts.

Praises Broadcasts

"On the day following each broadcast," he said, "150 people visit the store to get a Seth Parker book. That number dwindles daily until we have only 25, usually, just before the radio program. Then another broadcast, and sure as fate, in comes a mob the next day."

Of his sales problems, this dealer said: "There's a lot of work to be done in Indianapolis on educating people to the need for refrigeration.

"The drop in refrigerator prices during the past few years has brought the product within range of low-income classes which don't fully comprehend why electric refrigeration is really a necessity."

An increase of 50 per cent over last year's sales is expected by A. F. Head, president of the Hoosier Electric Refrigerator Corp., G-E distributorship serving 75 dealers (one-third of them utilities) within a 65-mile radius of Indianapolis.

He believes his company's commercial business will increase 100 per cent, because general conditions have improved sufficiently to bolster profits of food shops, restaurants, refreshment establishments, etc.

Store and office air conditioning will be a source of a good income this summer, the distributor thinks, but he doubts that the home-cooling field will have much to offer for a year or so.

"Our dealers are very cheerful about this year," said Mr. Head. "And the utility branches handling G-E are planning to work on refrigeration sales more aggressively than ever before. They're convinced that this year is the time for the big push."

In Indianapolis, this distributor has 30 salesmen working on household retail sales, and five men on commercial. He claims to have done 22 per cent of the total domestic business in the Indianapolis area last year.

Norge Distributor Optimistic

At the Gibson Co., Norge distributor, we found E. M. Steves, refrigeration manager, in high spirits. He was checking up on his '34 business to date (his firm does no retail business), and here is what he reported:

In the first three months of this year, the company sold seven times as many refrigerators as in the same period of 1933. This March was six times better than last, better even than April of last year.

Prospects are that April will produce triple the sales of the corresponding month in '33, and that total 1934 sales will be at least 100 per cent greater than last year's.

Gibson has added three field men to its staff (making five in all), and has opened a branch in Ft. Wayne for sales and warehousing purposes. It already has a branch in South Bend.

In addition, it has opened a green-and-silver display room on the third floor of its building in Indianapolis, giving 2,025 sq. ft. of floor space for exhibit of Norge products to prospective dealers.

Mr. Steves has 100 dealers in all—12 of them in Indianapolis. He told us:

"The refrigeration business in small towns is generally slower getting under way than in the cities. But this year our small-town dealers have started making sales as soon as city retailers. All retailers are selling more 6- and 7-cu. ft. deluxe models than any other size.

Several associations in Indianapolis are sponsoring a Home Show there from April 6 to 13. The Gibson Co. will have a Norge display at the affair, E. M. Gass, general sales manager said.

Electric League Is Help

One of the sponsors is the Indianapolis Electric League, membership in which is open to appliance distributors and dealers. It has been of value, Mr. Steves told us, because it has given merchandisers a good opportunity to exchange ideas, and because it has conducted some worthwhile sales promotion programs.

When employes of the Pearson Piano Co., Indianapolis Kelvinator dealership (household only) at 128 S. Pennsylvania St., talk about selling refrigerators, they mean a *lot* of refrigerators.

Reason: the store uses the meter plan of selling, will install a Kelvinator without any down payment, meters for some models requiring only 15 cents per day.

In January of 1933, the dealership sold seven Kelvinators; in February, 14; March, 33. Then it started using Meter-ators, and its sales for the rest of the year were:

April, 117; May, 279; June, 259; July, 190; August, 152; September, 108; October, 63; November, 45; December, 71. Total for the year, 1,338.

In January of this year, it sold 66; in February, 70; in March, 140. Benj. V. Hinshaw, refrigeration manager, expects 1934 sales to total 2,000.

Many Sold on Meter Plan

Of his store's method of selling, Mr. Hinshaw told us this: "Only a very small percentage of our buyers actually use the 15-cents-a-day plan. Most of our sales are meter sales, but for more than this minimum daily payment. Many of our customers make substantial down payments.

"Last year, we played up the meter payment plan a great deal in advertising. This year, however, our prospects are showing so much interest in higher-priced models that we're going to talk quality and features in most of our advertising."

He continued, "General business in Indianapolis has shown some improvement recently, but we expect our business to be better than that average, because the public is showing an especially live interest in refrigeration.

The Pearson company has 12 outside salesmen. More 7-cu. ft. models have been sold this year than any other, and the average gross sale of the store's refrigeration department has been $200, according to Mr. Hinshaw.

W. C. Griffith, president, and G. F. Hyde, sales manager, were the men we talked to at the Griffith-Victor Distributing Corp., Grunow wholesaler in Indianapolis. Both are pleased

(*Concluded on Page 6, Column 1*)

NEWS ABOUT DEALERS

(*Concluded from Page 4, Column 5*)

with the outlook for this season.

Question: "How's business?"

Answer: "Dandy. March was better than any month last year. We have 38 carloads of Grunows ordered right now. We're completely out of some models."

In 1933, the company's 150 dealers sold 2,200 refrigerators. This year, Messrs. Griffith and Hyde expect at least to double that.

CWA Projects Help

Mr. Hyde said, "All our dealers tell us they'll double or triple last year's sales and one man says he'll do 10 times his '33 volume.

"The reason is that neither we nor they could get under way with Grunow (then new) until the middle of spring. Now the dealers understand the business and were ready to go early in the year.

In Mr. Griffith's opinion, the CWA has been a big help to dealers in some communities. Many of them had a good store traffic in March despite the cold weather (which hurt the business of many retailers around Indianapolis, we learned).

One of his statements was, "Selling will be much easier this year than it was last. The demand for electric refrigeration is definitely established. It's just a matter of means now, and many people seem to have the money this spring."

Busy Industrial Plants Aid Connersville Dealers

Connersville, Ind. (population 16,000) is a busy little city these days, and from a mere tabulation of payroll figures in its several plants and factories you can get a pretty good idea as to what kind of a season local refrigerator dealers anticipate.

The Auburn automobile plant is employing 2,500 men, and the Rex Mfg. Co. has 1,017 men at work making electric refrigerator cabinets. Davidson Enameling Co., which does most of Rex's porcelain finishing, is operating 24 hours a day with 400 men.

McQuay-Norris Mfg. Co. is employing 275 men in the manufacture of auto replacement parts, and 350 men are busy at the Steel Kitchen Cabinet Co. Stant Machine Co., maker of hub and radiator caps, is employing 200 persons. The Connersville Blower Co. is also fairly busy.

Your reporter went out to the Rex factory, and found it buzzing. With Edgar Myers, sales manager, we went through the plant, and learned that the company is making more cabinets per day than ever before(see story on page 1 of this issue).

Then we went into the office of President C. C. Hull, and found him busy with G. W. Ansted, treasurer; M. R. Hull, factory manager; and A. L. Clark, cost superintendent, discussing ways and means of boosting production still more.

Mr. Myers told us that Rex had to turn down several good orders this year, simply because the factory didn't have facilities for producing any more cabinets than its present orders call for.

It isn't much of a task finding refrigeration dealerships in Connersville, for there are six of them in one block. We visited all but the Public Service Co. of Indiana (Westinghouse) which was closed by the time we got to that end of the line.

First to attract our attention was the Connersville Electric Sales Co., which has just started business with the Kelvinator household line. Proprietor is A. I. Downing, formerly sales manager of the utility there, and W. R. Chapman, sales manager, comes from the appliance department of the Montgomery Ward store in Marion, Ind.

These men had opened their spic-and-span showroom just five days before we called, and had already sold a Kelvinator, five ABC washers, and two large Atwater-Kent radios. They believe they will sell 80 refrigerators this year.

On its opening day, 800 people visited the salesroom, Mr. Downing having spent $300 on advertising the new company—most of the lineage being used as a tie-in with a four-day cooking school held the week before by the *Connersville News-Examiner*.

Sales Manager Chapman expressed the opinion of all the other dealers interviewed when he gave his own on the outlook for this year:

"The refrigeration business is bound to be good here this season. Connersville people are already sold on the need for electric refrigeration. Only lack of money kept more of them from buying last year, I find. Now, with all the factories working, people are getting money again, and a good many of them will make a refrigerator their first purchase."

Frigidaire Dealer Oldtimer

Roy B. Tope has been the Frigidaire dealer in Connersville for seven years. Even his competitors say he has done a good job, and has sold so much commercial equipment in the town that there's practically nothing left but the replacement market.

His household business has been good this year, and he expects to top last year's 64 sales by a good margin before the end of '34.

This gives some indication as to how business has been this season:

"Last year," he said, "I made my first household sale on St. Patrick's Day. When that date rolled around this year, I had already sold 14 refrigerators." Fifty per cent of his sales this year have been for cash.

Mr. Tope has made two commercial sales this year, too—a 2-ton unit for the meat-cooling room of the Brinkman Packing House, and a 3-ton unit for cooling kegged beer in the Fayette Beverage Co., beer distributor.

Regarding commercial prospects for the rest of this year, he said, "there's no place left to sell commercial jobs here. There are just two grocery stores and two restaurants that haven't electric refrigeration. Three of them *can't* buy, and the other *won't*.

This dealer is his own sales force. Said he: "I don't want any outside salesmen. They would just make promises I couldn't keep." He has a girl who takes charge of the store when he is out visiting prospects.

Heretofore, the Smith Music & Electric Co., G-E dealer in Connersville, hasn't pushed its refrigeration business aggressively, but chose to do most work on other appliance lines.

This year, however, with Connersville in such splendid financial condition, and a number of people showing their intention of buying refrigerators, Proprietor R. W. Smith is going to put some real effort on his refrigeration business.

Last year, he handled the Norge and Majestic lines, but dropped them for G-E when the power company gave up the latter make five months ago and took on Westinghouse.

The company made 15 refrigerator sales in 1933, and expects to make between 50 and 70 this year. It will use extensive billboard and newspaper advertising on refrigeration all during the summer.

"Our store traffic alone leads me to believe that this will be Connersville's biggest year to date on refrigeration," Mr. Smith remarked.

The Rem-Bu Sporting Goods Co., Crosley dealer, handles electric refrigeration as pretty much of a sideline—does almost no advertising on it, has no outside salesmen.

Nevertheless, it sold 45 Crosleys last year, and expects to sell 65 this season. Three have been sold already.

"We pay less attention to refrigeration than to our other products, said C. E. Bullard, proprietor. "But it sells *without* much attention.

"Nearly everybody in town wants an electric refrigerator—we don't have to go out and sell folks on the need for it. It's just a matter of whether they have enough money to buy one.

"Now, more people here have money than had it last year, so we'll just naturally make more sales."

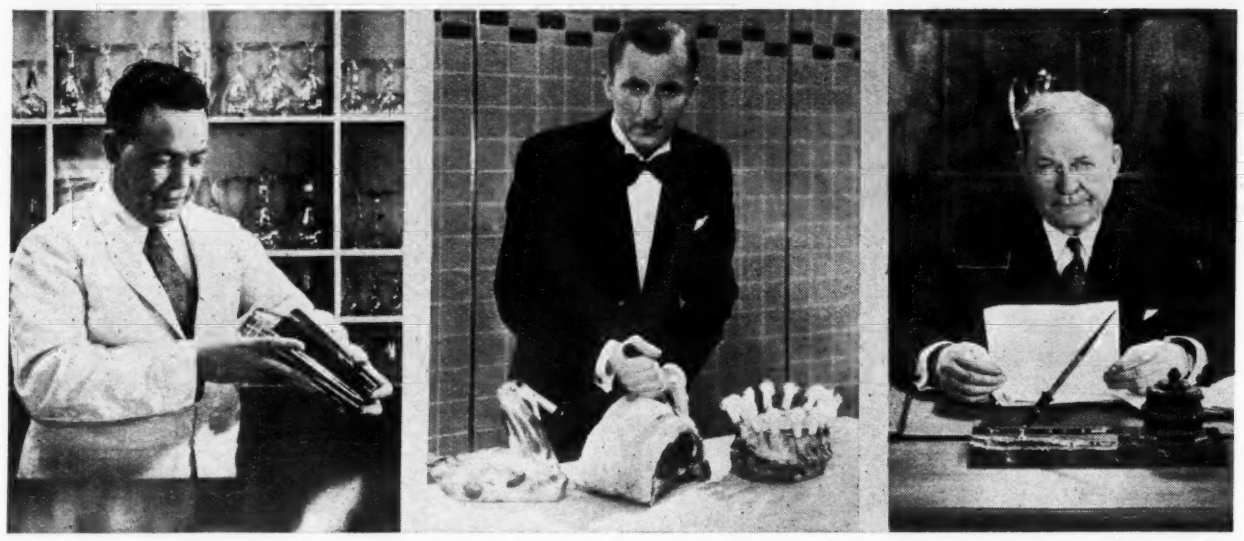
Druggist Handles Stewart-Warner

Just starting in the refrigeration business in Connersville, with the Stewart-Warner line, is the Alligator Drug Store, owned by M. E. Elliott. Roscoe Best, once a Crosley salesman, is to have charge of all refrigeration selling.

Mr. Elliott expects to do a good business in refrigeration because of general traffic in the store, which is open 16 to 18 hours a day, and because employes of the Rex plant, which makes Stewart-Warner cabinets, will be good boosters.

Already, he said, several of Rex workers have brought a friend to the store to see the refrigerators, and show him what part of the cabinet they have a part in making.

Show Art of Food & Beverage Serving



William B. Ahern, supervising instructor of the New York Bartenders' Union school; Max Cullen, manager of the merchandising department of the National Livestock & Meat Board; and John P. Harding, famed Chicago restaurateur, have starring roles in a sound movie which Frigidaire will exhibit to food industry groups.

Export Trade Better Says Starr Official

By Elston D. Herron

RICHMOND, Ind. — Export shipments of Starr-Freeze refrigeration equipment this season are well ahead of those made up to this time in 1933, according to E. Ravinet, export manager of the Starr Co. here.

Orders from foreign countries for commercial equipment have exceeded those of the first three months last year by 35 per cent, and 60 per cent more household refrigerators have been ordered.

Mr. Ravinet attributes this increase in export business to better economic conditions abroad, the improved position of the dollar in foreign exchange, and the liberalized attitude of our government toward imports from other countries—causing the latter to place larger orders for American-made products.

From France, Holland, Belgium, Italy, Spain, Portugal, and the United Kingdom the Starr Co. has received orders this year for both commercial and household units, and some complete domestic refrigerators.

Orders from Argentina and Brazil have been for almost equal lots of commercial machines and complete household refrigerators, says Mr. Ravinet.

Other South American countries, the Dutch East Indies, China, and South Africa have placed orders, most of which were for domestic refrigerators.

Indications are that the remainder of 1934 will bring an increasingly good volume of export business, barring some economic catastrophy in the countries concerned, the export manager says.

All of the Starr Co.'s foreign business is conducted with direct importers, who buy refrigeration equipment for resale. In Europe, the Far East, and Brazil, Starr has factory representatives who contact importers there

Europeans are apparently developing a taste for ice cream, asserts Mr. Ravinet. This year, for the first time in his 12 years as an export man, he has received a number of inquiries from European companies as to where ice cream cabinets can be purchased.

Frigidaire Distributors Report Early Response

DAYTON—The greatest showroom traffic in the history of the Frigidaire Corp. retail sales organization was reported March 31, by Frank R. Pierce, sales manager, after a telephone check with distributors and district managers.

Frigidaire's spring selling campaign was launched March 21 in 6,000 retail stores, department stores and utility appliance shops from coast to coast.

Typical of the reports of distributors and district managers, telephoned to Dayton, is that of J. J. Pocock, veteran Philadelphia distributor, who pointed out that despite terrible weather, dealers were getting big play on showings, with Strawbridge and Clothier department store, closing 10 sales and obtaining 40 prospects in one day. Delchester Utilities Corp., Chester, Pa., reported five sales and 20 good prospects obtained on the first day of the showing.

E. A. Cox, of Cox and Blackburn, Houston, Tex., reported that retail sales in the first three weeks of March were double the sales for the entire month last year. The Strang Garage Co., Colorado Springs, Colo., reported 1,000 visitors on the opening day of the showing despite rainy weather.

Grunow Orders on Hand Total 30,000 Units

CHICAGO—Orders on hand for Grunow electric refrigerators last week totaled 30,000 units, declared H. C. Bonfig, vice president and general sales manager of General Household Utilities Co.

Mr. Bonfig returned last week from a trip with one of the Grunow sales promotions caravans which put on 40 dealer meetings throughout the country. Approximately 1,000 new retailers have been added to the Grunow list in the past two months, according to Mr. Bonfig.

Refrigerators Prominent at Milwaukee Home Show

MILWAUKEE—A dozen makes of refrigerators were on display at the annual Milwaukee Home Show which closed here recently after being visited by a recorded attendance of 105,756 people.

E. H. Schaefer, president of the E. H. Schaefer Corp., General Electric distributor, which had one of the largest refrigeration booths at the show, reported that approximately 1,600 prospect names were obtained by his salesmen during the period of the show.

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Will Air Conditioning Save the Nation?

ONLY a miracle can relieve the citizens of the United States from the immediate necessity of deciding between three radically different types of government, declares Prof. Walter J. Shepherd, president of the American Political Science Association and dean of the literary college of Ohio State University.

That miracle, he maintains, would be the *sudden revival of industry through the invention of some machine* similar to the automobile which will become an immediate necessity in every American home.

Speaking before the section on history and political science of the Michigan Academy of Science, Arts and Letters, Dean Shepherd stated:

"It seems that we now are forced to accept the fact that the era of unfettered capitalism has come to an end. Its existence is dependent upon new markets and ever-increasing industrial development. We now have come to the place where all markets virtually are absorbed, and where our machine development has reached a point of saturation."

Three Potential Alternatives

This, Prof. Shepherd believes, leaves three alternatives upon which to rebuild a social and political system: (1) Complete business control under a dictatorship modeled upon that of Fascist nations like Italy; (2) Communism, with a system of industrial control similar to that prevailing in Russia; (3) A planned economy in a capitalized system—the ideal upon which the "'New Deal" is founded.

Success of the "New Deal," he asserts, will probably result in the destruction of many such treasured American institutions as State's Rights, Separation of Powers, Judicial Review, the Party System, and Government by Popular Vote.

In other words, the sentence heard so frequently nowadays, "It was a free country," will become literally true.

Air Conditioning the 'Miracle?'

To those Americans for whom the idea of signing away their individual liberties, their "fought-bled-and-died-for" rights of political self-government, is anathema of the most maddening variety, let us point out that Prof. Shepherd's "miracle" might really come to pass.

His specifications for the miracle—"revival of industry through the invention of some machine which will become an immediate necessity in every American home"—are remarkably well met by air conditioning.

R. E. Hellmund, chief engineer of the Westinghouse Electric & Manufacturing Co., declares that "without any doubt, air conditioning has *unlimited* possibilities both as a potential business for the manufacturers and as a load builder for the utilities." He continues:

"The statements frequently made to the effect that the total potential business along this line may run not only into millions but into billions of dollars and that several millions may be spent for such equipment in cities like Chicago within the next few years are by no means exaggerated. When we size up the market for an item such as the domestic refrigerator we are generally limited to a certain percentage of the 20,000,000 homes, and yet this business is quite appreciable. In the case of air conditioning the same number of homes represent a market for either a central system or for several room coolers each. In addition, business establishments, such as restaurants, barber shops, stores, mortuaries and many others, represent very large potential markets.

Vast Market for Equipment

"The vast number of offices in our great cities and in industry represent another broad market for room coolers and condensing units, especially in structures already existing. While the loads of refrigerators range in fractions of a kilowatt per unit, cooling units for air conditioning represent loads from 1 to 20 kilowatts.

"There is every reason in the world for believing that this same human race which has for the past decade expended every effort possible in eliminating the heavy burden of labor, both in industry and in the home, will just as willingly direct its attention toward comfort as the next step if such comfort can be brought within the reach of many of them.

Costs Must Be Reduced

"The present rather high first cost and operating cost of cooling equipment will be only a temporary handicap. Costs will be reduced, and there is no reason why in normal times the public, which in the past has spent hundreds of dollars for washing machines, refrigerators and similar devices, and which has carried appreciable expenses for owning and operating automobiles, will not be willing to spend similar amounts for comfort and health, especially during the hot summer months."

Chief Engineer Hellmund, we believe, has stated the case admirably. Already there is a widespread public acceptance and desire for air conditioning. The potential market is so big that it staggers the imagination. What seems indicated at the present moment is further engineering development. To realize the vast market predicted by Mr. Hellmund—and thus to bring to pass the miracle required by Prof. Shepherd—it is apparent that initial cost and operating cost of air-conditioning installations need to be reduced, and that the equipment needs simplification and standardization.

Time Is a Factor

Time, of course, is the X quantity in this apparently desperate equation. If technical progress in air conditioning can be maintained at a rate sufficiently rapid (and here, Mr. Stuart Chase and Disciples, is a case in which machine development has lagged behind public demand) to permit the building of this gigantic industry in the very near future, air conditioning may well be the shot-in-the-arm which our groggy capitalistic system needs.

Should technical development lag behind, this country seems headed for red, white or blue-shirt regimentation, if we are to follow Prof. Shepherd's pertinent analysis of the situation to its logical conclusion.

Appropriations for—and encouragement of—research in air conditioning should then, serve two purposes: (1) the obvious and immediate purpose of enabling a manufacturer to obtain his share of a magnificent waiting market; and (2) the larger and more momentous purpose of preserving the guarantees of freedom and liberty contained in our now apparently *passe* Constitution.

Answers to These Letters Are Given In the 1934 Refrigeration Directory

Coin Meters

Lincoln Radio Corp.
552 Fifth Ave., Brooklyn

Editor:

Will you please supply us with a list of all the refrigerator meter manufacturers in this country.

JULUIS BRECHER.

Stratton & Terstegge Co., Inc.
Main at 15th St., Louisville, Ky.

Editor:

Will you please send us the names of the best manufacturers of refrigeration meters that you know of. We prefer the kind that is operated with quarters, but which has the system of changeable cogs so that you can set it for 15, 20, 25, or 33⅓ cents per day, etc.

GENE KLINGMAN,
Manager, specialty dept.

Answer: For a complete list of companies making coin meters, see page 176 of the 1934 REFRIGERATION DIRECTORY.

Specifications

Belding-Hall Co., Inc.
45th St. & Park Ave., New York City

Editor:

Where can we obtain specifications of Sanitary electric refrigerators made by the Sanitary Refrigerator Co. of Fond du Lac, Wis.?

Van Bros. Refrigeration Service
8 Elm St., Westfield, N. J.

Editor:

We subscribe to the ELECTRIC REFRIGERATION NEWS and we would appreciate it if you would send us a competitive size and price list of all makes of refrigerators.

VAN BROS.

Answer: See specifications section starting on page 409 of the 1934 REFRIGERATION DIRECTORY.

Saturation by Counties

Tennessee Valley Authority
Knoxville, Tenn.

Editor:

In making a comparative statistical study of cities and counties in the Tennessee Valley states, I would like to have figures on sales of electric refrigerators for each county in the Valley area and for a group of selected cities.

My chief concern is for total sales rather than for any particular year, but if you have them by years I could get most of the information I need from figures for 1933.

I enclose a list of counties and cities with which I am concerned. If possible, please give me the sales figures either in total or for 1933 for each of the political subdivisions listed. In case you cannot give me all of the information, please give me what you have available.

TED LEITZELL,
Administrative assistant,
Compilation of basic data project.

Answer: See page 609 of the 1934 REFRIGERATION DIRECTORY.

Nema Sales

Postal Telegraph

Editor:

Please mail me to Lakeshore Athletic club, Chicago, tabulation of Nema sales for the United States for 1933 broken down according to cabinet size. Thanks in advance.

DAVID F. GOLDMAN,
North American Radio Corp.

Answer: See page 508 of the 1934 REFRIGERATION DIRECTORY.

Exports

Sunbeam Electric Mfg. Co.
Evansville, Ind.

Editor:

Please send our New York office at 1720 Grand Central Terminal building, record of exports of refrigerators for November and December, 1933, sending copy to us at Evansville, at the same time.

J. HENRY SCHROEDER,
Vice president.

Answer: See "Refrigeration Exports" on page 574.

Wired Homes in Greater New York

R. L. Polk & Co.
Direct Mail Division
367 W. Adams St., Chicago

Editor:

I would like very much to have my subscription combined with one copy of the 1934 REFRIGERATION DIRECTORY.

In the meantime, I would appreciate it very much, if you could give me some information taken from this 1934 DIRECTORY. How many wired homes are there in Greater New York? And can you give me the potential refrigeration sales for this same territory?

ELMER J. JANTZ,
Sales manager.

Answer: See "Analysis of Trading Areas" starting on page 627.

Central Station Business

General Electric Co.
Electric Refrigeration Dept.
Nela Park, Cleveland

Editor:

Now that sales records for 1933 are in, I wonder if you can give me the actual or a fair estimate of percentage of the electric refrigeration business done by the central stations. If you are in position to relate these figures to prior years and indicate whether the central station is increasing or decreasing its position in the industry sales, this also would be good information.

Any comment as to the attitude of the central station in connection with activities for 1934 on major load building appliances, will be appreciated.

H. H. BOSWORTH,
Manager, central station div.

Answer: See dealer survey starting on page 454.

List of Manufacturers

United States Department of Agriculture
Bureau of Home Economics
Washington, D. C.

Editor:

The Bureau library owns a copy of your 1932 REFRIGERATION DIRECTORY AND MARKET DATA BOOK, and the Department Library has placed an order for a copy of the 1934 edition. Unfortunately, we need to use in some rush work the list of manufacturers of household systems in its up-to-the-minute form.

If it can be arranged, it would assist us greatly to have immediately a copy of the 1934 list of manufacturers of household systems, or possibly a correction sheet for the 1932 list.

LOUISE STANLEY,
Chief.

Answer: See page 262 of the 1934 REFRIGERATION DIRECTORY.

Sales by States

The Des Moines Register and Tribune
Des Moines, Iowa

Editor:

Are the electrical refrigerator sales figures by states available for the entire year of 1933?

The last figures we have are those in your issue of Dec. 6, 1933, which gives the figures for 10 months.

If you have the total by states for the entire year we would appreciate your forwarding this information to us.

We wish at this time also to enter our order for 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

HAROLD E. MIDDLETON,
National advertising.

The American Weekly
959 Eighth Ave. at 57th St.
New York, N. Y.

Editor:

In 1932 we purchased a copy of your REFRIGERATION DIRECTORY AND MARKET DATA BOOK which gave the number of electrical refrigerators sold in 1931 by states. This was, of course, an estimated figure. Can you give us approximately the same information for 1933, or better yet, can you tell us approximately how many electrical refrigerators are in use in each of the states?

H. SPINNER,
Plan and research.

Mitchell-Faust Advertising Co.
230 N. Michigan Ave., Chicago

Editor:

Mr. G. N. Brown of the Electric Refrigeration Bureau, in New York, tells us that he believes you have figures on the number of household refrigerators by states. We wish very much to get these figures.

LYMAN L. WELD,
Secretary.

Answer: See page 557 of the 1934 REFRIGERATION DIRECTORY.

Terhune to Represent Servel in New England

EVANSVILLE, Ind.—E. A. Terhune, former president of the Appliance Engineering Co. of Boston, Copeland and Universal Cooler distributor, has been appointed by Servel Sales, Inc., as its district representative for the New England area.

Shortly after his appointment, Mr. Terhune signed up Ballou, Johnson & Nichols Co., Providence, R. I., wholesale hardware organization, as distributor for the Servel line of commercial refrigeration and air-conditioning equipment.

Ballou, Johnson & Nichols Co. will cover all of Rhode Island, eastern Connecticut, and southern Massachusetts. The company will sell retail in Providence and through appointed dealers in the area. Joseph A. Ballard, vice president and general manager, and Harry Tracy, sales manager, will be in charge of Servel sales.

Shows Are Feature Of Bureau Activity

NEW YORK CITY—Field Manager G. W. Allison of the Electric Refrigeration Bureau this week will swing through the South and Midwest in the final stage of a 7-weeks' tour in which he is speaking at dealers meetings in 13 states.

Dr. Allison is scheduled to speak in New Orleans, April 3; in Birmingham, Ala., April 4; in Louisville, Ky., April 5; in Cincinnati, April 6; in La Crosse and Eau Claire, Wis., April 9; in Red Wing and St. Paul, Minn., April 10; in Faribault and Mankato, Minn., April 11; in Montevideo and St. Cloud, Minn., April 12; in Fargo, N. D., April 13; and in Minneapolis, April 14.

On March 8 and 9, in Seattle, Dr. Allison spoke at the convention of the Northwestern Electric Light & Power Association on "Home Modernization—The Electrical Way."

9 in Wilmington Show

WILMINGTON, Del.—Nine makes of refrigerators were on exhibition at the spring electric refrigerator and electrical show held March 28 to 31 here. The exhibit was held in the gold ball room of the Hotel Dupont and was was under the auspices of the Electrical Trades Association of Wilmington.

John S. Reburn was general chairman and was assisted by the following committee appointed by President Royal S. Hull: J. E. Workman, George C. Tunis, Harry W. Loose, George M. Reese and Harvey Poole,

The following refrigerators were on exhibition: Frigidaire, General Electric, Gibson, Grunow, Kelvinator, Leonard, Norge, Sparton and Westinghouse.

South Jersey League Show

CAMDEN, N. J. — Sixth annual spring refrigeration show of the Electrical League of South Jersey will open here today (April 4), and will continue throught Saturday.

William Fulton, chairman of the Refrigeration Board of the league, is directing the show and is assisted by the following board members: Leo Spector, James Dwyer, Charles Swartz, William A. Major, Howard K. Suckling, B. A. DeYoung and Daniel P. McConnell.

Last spring's refrigeration exposition was attended by more than 6,000 visitors and a total of 128 refrigerators were sold from the floor.

Burlington, N.J., Exhibit

BURLINGTON, N. J.—Five local electric refrigeration dealers, including the Public Service Electric & Gas Co., will participate in the second annual electric refrigeration show which opens here Thursday, April 5, and continues through Saturday.

The show, which will be devoted to electric refrigeration exclusively, is to be held under the auspices of the local Electric Refrigeration Bureau. William L. Gauntt, president, and Francis Morris, secretary-treasurer of the local bureau, are in charge of the arrangements.

Giant Watch Features Display of Kelvinators

DETROIT—A giant Gruen watch was co-featured with the new Kelvinator household line in a novel exhibit sponsored by the local branch of Kelvinator Sales Corp., at the North American Flower Show held here March 17 to 25.

Theme of the exhibit was that the Kelvinator is built with the same precision as a Gruen watch, and to emphasize this point, the Gruen factory loaned to the Detroit factory branch its giant Gruen pentagon watch built 100 sizes larger than its regular standard model, and costing $10,000.

This large watch was mounted on top of one of the deluxe two-door models and revolved slowly on a turntable. Two large 500-watt flood lights played on the exhibit.

G-E—Russ Exhibit at Beer & Wine Show

NEW YORK CITY—Rex Cole, Inc., General Electric distributor, exhibited beer cooling and commercial refrigeration equipment in conjunction with the Russ Soda Fountain Co., at the First International Beer and Wine Show held here recently.

The exhibit consisted of a 14-ft. Russ bar, a portable beer dispenser, a "Handy Andy" cocktail wagon, a General Electric CM-4 commercial compressor with a conditioned-air evaporator, and a cabinator equipped with a G-E HE-3 unit.

The display was manned by Joseph Osterholm and Mortimer Prall of the Rex Cole commercial department and R. K. Merritt of the Russ Soda Fountain Co.

Dealer in Hurry to Get Train Sells 13 Jobs In One Morning

COFFEYVILLE, Kansas — Norge dealer E. H. Ross here recently set about one Saturday morning to clean up some odds and ends on his prospect list before catching a noon train for a dealer meeting in Muskegon—and by noon time he had a sore arm from writing up the 13 sales which he made that morning!

Mr. Ross gives a running account of how it happened as follows:

"Early Saturday morning two ladies came to our store, one to help the other select the refrigerator she would like best. They both liked the features of the Norge so well they decided to buy them together. They purchased two D-5's.

"I had an appointment with an apartment house owner for 9 o'clock that morning. I called and completed the sale for six A-44's.

"I was in the neighborhood of a prospect I had called on two nights previous, so I called to see if they were any nearer a decision. The lady said they had about decided on a J. L. model and that I might call on her husband at his office. I did and he signed the order.

"At the store I stopped to turn in the orders. While there I received a call from a prospect that I had tried to sell two months before. He had needed some service on an old machine at that time, but he decided to wait till some future time to buy a new one. That Friday night the machine failed to work again and it was necessary to take the contents to a neighbor's refrigerator for safe keeping. He called that morning to see what the trade-in value would be on a new Norge. The deal was completed for an M model.

"I knew of a prospect who was interested in installing three Norges in his triplex apartment house, and knowing I would be out of the city about a week I thought I would call for his order before leaving, as a competitor was on the job. He signed for three J models. It was 12:15 and I had 45 minutes to catch the train for Muskegon."

Muskegon Dealers Form Association; Plan Show

MUSKEGON, Mich.—The Electrical Appliance Dealers Association, organized here recently, is making plans for an elaborate cooking and appliance show to be held at the local Mart, April 10, 11, and 12.

About a dozen Greater Muskegon electrical dealers will cooperate in putting on the show.

Officers of the association include Clarence J. Peterman, Peterman Electric Co., chairman; Frank Harvey, Independent Electric Co., treasurer; and Sam Stites, Consumers Power Co., secretary.

An executive committee comprised of Messrs. Peterman, Harvey, Stites, Ray E. Morency of Consumers Power Co., and Warren Fredricks of the Fredricks Lumber Co., has been placed in charge of general arrangements for the exposition.

Norge Speeds Production To Meet Orders

DETROIT—Unfilled orders as of March 15 were more than 1,000 per cent greater than those on hand on the same date last year, Howard E. Blood, president, Norge Corp., declared last week.

The Norge plant at Muskegon Heights now employs about 2,300 men and is working four shifts of six hours each per day.

Norge exports have increased this year, according to Mr. Blood, export sales for the first 75 days of 1934 being 70 per cent of the entire 1933 Norge export sales volume.

Grunow Dealers Have Color Page in Buffalo Paper

BUFFALO—A Grunow page advertisement in colors, stressing the qualities of the refrigerant Carrene and calling attention to the weekly broadcasts sponsored by Grunow, recently made its appearance in the *Buffalo Times*. Small block advertisements giving the names and addresses of 10 local Grunow dealers were combined in the full page of copy.

Camera Hobby Used to Promote Cooler Sales

CHICAGO—Elliott Robinson of the water cooler department of R. Cooper, Jr., Inc., G-E distributor, is using his camera hobby to promote sales.

Robinson takes snapshots of installations and adds them to his collection so that he may show new prospects what the various coolers will look like after an installation has been made.

More snapshots of Frigidaire executives in oratorical poses. First four are of W. D. McElhinny, commercial sales manager. Next is H. B. Fitzwilliam, household sales manager of the St. Louis Frigidaire distributing organization. The gentleman hammering home a strong assertion in the final picture of the strip is C. E. Quigley, manager of the beverage cooling division.

BY G. F. T.

Stewart-Warner's Progress

By the time this issue of the NEWS is in your hands, Stewart-Warner's corporate structure may be changed, and the company may have a new name: Stewart-Warner-Alemite. At the moment this is being written, stockholders are meeting with the purpose of voting on this change of name, and on the reduction in the par value of capital stock from $10 to $5 a share.

Another matter which is on the minds of Stewart-Warner executives is the $1,000,000 suit against former officers of Stewart-Warner (L. H. La Chance, chairman of the board; C. B. Smith, president; Vail R. Bucklin, vice president and treasurer; and Winfield J. Zucker, vice president) charging dereliction in their duty to the corporation, and alleging to the payment to themselves of excessive salaries and bonuses.

There is also a countersuit against the corporation by former Vice President Zucker on libel charges.

But none of these matters are having anything to do with Stewart-Warner refrigeration orders. These, apparently, are taking care of themselves.

In previous years, according to the best available estimates, Stewart-Warner has sold not much more than 2,000 or 3,000 refrigerators per annum. A comparable figure was reached *within three weeks* this year, and already orders have been received for more than four times the total production of the greatest previous year in the company's refrigeration history.

One of the reasons for this remarkable advance in Stewart-Warner's refrigeration fortunes—aside from the general increase in business being experienced by the entire industry this year—is the enlistment of several strong distributors.

Good independent jobbers in Albany, N. Y., Atlanta, Baltimore, Bluefield, W. Va., Buffalo, Charleston, W. Va., Charlotte, Chicago, Cincinnati, Cleveland, Columbus, Davenport, Decatur, Duluth, Houston, Indianapolis, Ithaca, Joplin, Knoxville, Little Rock, Louisville, Monroe, La., Nashville, Newark, New York City, Norfolk, Omaha, Philadelphia, Pittsburgh, Richmond, Saginaw, Mich., San Antonio, San Francisco, and Washington, D. C., now handle Stewart-Warner refrigerators.

Branch offices take care of the wholesale business in Boston, Denver, Hartford, Kansas City, Los Angeles, Milwaukee, Portland, St. Louis, and Wichita.

Among the names of the independent distributors appear such well-known names as Pierce-Phelps of Philadelphia (formerly Majestic's biggest distributor), Morley Bros. of Saginaw (formerly Gibson's biggest distributor), A. R. Tiller, Inc., of Richmond, Capital Electric Co. of Atlanta, Shaw Distributing Co. of Charlotte, Gierke-Robinson of Davenport, Mooney-Mueller-Ward of Indianapolis, and Stratton & Terstegge of Louisville.

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Monel Metal Job

Among the aces up Stewart-Warner's sleeve is its Monel Metal job which is part of the regular line, but which hasn't been pushed as yet.

CHARLES D'OLIVE, manager of the refrigeration department, thinks he has a winner in this striking model, says it can be produced readily and economically, and is biding his time for an opportune moment to campaign heavily on it.

Mr. D'Olive feels sure that Stewart-Warner will sell all the refrigerators the factory can possibly produce this season. That doesn't mean he expects to sell 100,000 jobs. The present Stewart-Warner production facilities simply aren't adequate for such a task.

But what's more interesting, *he wouldn't want to sell that many refrigerators even if he could produce them.* The Point of Diminishing Returns is somewhere below an annual production of 100,000 units, he believes, and the vast amounts of money needed to promote sales after this point has been passed are too great to justify the additional business they create.

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D'Olive the Flyer

If you ever happen to be in Mr. D'Olive's home, get him to show you his collection of war memorabilia. He was a flyer during the greater part of America's participation in the conflict, won the Distinguished Service Cross for his feat in outbattling five German planes single-handed (we read the citation), had a number of interesting flight companions—including the great EDDIE RICKENBACKER and famed producer MERIAN C. COOPER of RKO pictures, and has a most absorbing collection of mementos.

Somewhat reticent about these things, it was not until the other night, after we had shown some night photography tricks to his well-bred and popular son GENE (also a camera addict), that he got out his marvelous album of war pictures and his box of souvenirs.

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Radio Prospects

Stewart-Warner radio prospects are considered excellent this year by Messrs. HITER and OTIS, the new chief executives, because 1934 promises to be an "all-wave" year.

For six years Stewart-Warner has been building all-wave radio sets, and has been using the phrase, "the 'round the world radio" to promote this business.

Naturally, they think they know something about making this type of receiver, and hope that the prestige they have been acquiring on all-wave sets during the last half dozen years will serve them in good stead now.

Radio business has been good during the last several months, and the popularization of all-wave sets—now being made by a number of manufacturers, and heavily promoted—has largely been the cause, we understand. Apparently the best formula for inducing John Public to buy is give him something new.

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Crime and Justice

JIM BECKMAN, who used to be Copeland's publicity man, and who later worked for LOUIS RUTHENBURG, recently won a prize of $25 from *Liberty* magazine for his essay on "Crime and Justice." Being poor at publicity for himself, Mr. Beckman did not send the essay to us. We found it ourselves, while reading *Liberty* on an east-bound train. Here 'tis:

"DETROIT, Mich.—I hope that you will see fit to publish this suggestion to reduce crime by making justice swift and sure in our courts and taking away the profits of lawyers who fatten and batten on crime.

"1. Eliminate delays due to endless technicalities that protect the criminal to the injury of the public.

"2. End the system of privately employed criminal lawyers and require the court to appoint legal counsel both for the prosecution and the defense. All criminal lawyers would be listed on dockets in the courts, and they would be assigned to cases, not necessarily in rotation, but in relation to the qualifications of the lawyers for the particular cases to be tried. This would mean that a criminal lawyer would be assigned to the defense one time and to the prosecution another. It would put an end to criminal lawyers building up great reputations for freeing criminals who should be convicted. Also, it would mean that poor criminals would come into court on the same basis as rich criminals.

"The greater opportunity of rich criminals to escape justice often develops a sympathy for poor criminals because of the obviously unfair advantage rich criminals enjoy under the present system.

"3. Prohibit the private employment of expert witnesses and alienists and require the court, in the manner suggested for appointing lawyers, to appoint an equal number of expert witnesses or alienists of comparable ability both for the prosecution and the defense.

"This method would be the fairest, quickest, and surest way of securing justice for all classes of criminals. It would result in placing our criminal procedure on a scientific basis, and eliminate most of the causes that encourage crime, because the present system favors rich criminals and criminals protected by rich crime syndicates.

"Justice would be fully assured because the cases would be subject to appeal where necessary. There should be a distinct limitation to appeals which cause too much loss of time between the arrest, trial, conviction, and punishment of criminals.

"This plan would aid in breaking up crime syndicates by separating criminals from criminal lawyers in our courts. The partnership of criminals and their highly paid criminal lawyers has taken advantage of our too lax and loose court procedure, with the result that, unless it is stopped, people will resort to the short cut of lynching criminals who are now protected by a system that gives them the advantage of every technicality in their crimes against defenseless citizens."—*James W. Beckman.*

AIR CONDITIONING

A Practical Resume of the Fundamentals Of Air and Air Conditioning

By Andre Merle, Air-Conditioning Engineer

AIR conditioning can be defined as a mechanical process which enables man to control climate indoors. This is accomplished through the automatic regulation of four factors: temperature, humidity, air motion, and air purity. American engineers are the pioneers and leaders in this modern art or science. The basis of the art is air, which is necessary to sustain life. We cannot live very long without it. Air, therefore, is a very necessary and vital substance. It forms part of our earth and atmosphere.

Technically, we can describe air as a gaseous mixture. It has approximately 21 parts of oxygen (a most active element), and 78 parts nitrogen, which appears to dilute the oxygen. The balance of the mixture consists of water vapor and other gases, chief of which are: carbon dioxide, argon, neon, helium, and traces of ozone. Dust, some forms of bacteria and odors are also ever-present. This briefly classifies the entire gas which we know as air.

Most of you, no doubt, remember reading in history of the terrible catastrophe which occurred in a dungeon at Fort William, Calcutta, India. We refer to this dungeon as the "Black Hole of Calcutta." It was here, during the summer of the year 1758, that the most infamous disaster caused by lack of proper ventilation occurred.

According to history, 146 men were imprisoned in a space which measured about 18x25 ft. The men were locked in this dungeon early in the evening. Less than 10 hours later, 123 of them had perished from suffocation. Here, then, was our first example of the importance of proper ventilation. A copious supply of pure, fresh air would have averted this calamity.

Better to appreciate the value of fresh air, let us review the following well-known facts. We breathe during the course of 24 hours, an average of from 30 to 34 lbs. of air. This is equivalent to 16 cu. ft. per hour, or a quarter of a cubic foot per minute.

We inhale about 16 times per minute, and draw into our lungs an average of 30 cubic inches of air at each breath. Air, as it enters our lungs, gives up part of its oxygen content, which passes through our delicate cell walls and enters our blood. Exhaled air contains about 17 parts of oxygen (a loss of four parts), and CO_2 gas which was generated during the process of food oxidization and tissue building.

Fundamentals of Climate

The most important factor of air conditioning, therefore, is *air*, our atmosphere. Next in importance is the condition of our atmosphere or air. We cannot control or regulate conditions out of doors, but we can and do control climate at will indoors. It may be well to bear in mind that the average individual spends by far the greater portion of his time indoors.

We work usually, eight hours per day, indoors. Two more hours are spent traveling in a train or subway, indoors. Then allow say, eight hours for sleeping, also indoors. The remaining six hours are for pleasure, and as a general rule, we spend them indoors.

Thus, we spend three quarters of our life indoors. Is there any wonder that the subject of air conditioning, which permits the control of indoor climate, is receiving such favorable nation-wide attention?

What then are the proper air conditions to maintain indoors for health and comfort? This question can best be answered by a study of what constitutes *Ideal Climate*. Imagine, if you will, living conditions as they exist in the Frigid Zone. Here, we find a rigorous, cold climate. Soil is nonproductive and the country sparsely populated. Its people are very rugged, true, but due to the severeness of their climate, they are not progressive.

Climate in the Torrid Zone, on the other hand, is just the opposite—warm and humid. The soil is rich in vegetation and life, and its necessities are comparatively easy to obtain. But, due to the excessive heat, one's energy, vitality, and efficiency are quickly reduced.

Conditions in the temperate zone are very invigorating, neither excessively cold nor warm, dry or humid. We enjoy the healthful, variation or rotation of climate during the various seasons. The nerve-racking monotony of constant cold or warmth, rain or snow, and aridness is not present.

Such a climate is both healthful and comfortable, and as a result the most progressive peoples inhabit our temperate zones. They are active, alive, industrious, and healthy. They are progressive, efficient, producers, and their industries are both large and varied.

Here, then, is a model climate. Why not produce it indoors the year around? Naturally, every day out of doors may not be perfect, it may be too wet or too dry for certain manufactures. Then, again it may be too warm or chilly. Our climate is varied, it has its rainy days as well as it's dry ones. Some days may be cold, others warm and a period of a stormy, windy, dusty seasons.

In order to produce this ideal climate indoors, we would have to provide mechanically four important factors of air conditioning:

1. Comfortable temperatures. Not too warm or chilly.
2. Regulated humidity. Not too wet or dry.
3. Correct air motion and air distribution. Not too drafty or windy.
4. Clean, pure air, free from all dust and bacteria.

Technical Terms

Better to understand the subject of air conditioning, let us review some of it's more important technical terms. We should be fully conversant with the following:

Heat is a form of energy. Every substance on earth contains some degree of heat. It flows from one position to another and its rate of flow is dependent upon the degree of pressure or temperature differential.

Dry-bulb temperature is the temperature of the air as measured by an ordinary thermometer.

Wet-bulb temperature is a measure of the degree of moisture. It is the temperature of evaporation. We speak of it as the second temperature of air—a most important one, incidentally in air conditioning.

Dew-point temperature is the temperature at which the air becomes saturated. When air reaches this point or temperature it contains all the moisture it can support.

Humidity refers to the water vapor that is in the air. When air has all of the water vapor (humidity or moisture) it can hold, we speak of it as being fully saturated. Bear in mind that the absolute weight or amount of moisture varies the temperature of the air. At 80° F., 1 lb. of fully saturated air contains 155 grains of moisture. At 60° F., it contains but 77 grains.

Remember, that the humidity ever-present in air is usually in vapor or gaseous form. It is only changed into water when the temperature of the air mixture is brought below its dew point.

Relative humidity expresses the percentage of saturation at a given temperature. Air at say 50% relative humidity contains but one-half of the water vapor (moisture or humidity) it is capable of supporting at a given temperature.

Sensible heat is the heat of the air at dry-bulb temperature. Technically, the sensible heat or specific heat of dry air at constant pressure is .241 B.t.u.'s. It may be well to state at this point that the air capacity of dehumidifiers is based on the sensible heat load to be extracted. This is logical when we consider that the air entering the room does not in itself dehumidify. Conditioned air averages the room temperature and its humidity as well, by mixing.

Latent heat is the heat required to transform liquid to a vapor, or vapors to a liquid.

Latent heat of vaporization is the heat required to change a liquid to a vapor. It requires 970.4 B.t.u.'s to change water to steam at 212° F. We utilize this heat in winter humidification.

Latent heat of condensation represents the heat extracted when we change a vapor to a liquid. It requires the extraction of about 1,060 B.t.u. to

(*Concluded on Page 12, Column 1*)

Andre Merle received his early training with the Carrier Engineering Corp. At present, he is engaged on the staff of Clyde R. Place, consulting engineers, as an air-conditioning engineer and designer, on the huge Rockefeller Center development.

Paper presented at the 11th annual convention, American Oil Burner Association, March 9, 1934, at Philadelphia.

Merle Defines Terms In Air Conditioning

(*Concluded from Page 11, Column 5*)

condense the air we exhale. In air conditioning practice, we speak of this process as dehumidification.

Total heat is the sum of both sensible and latent heats. The wet-bulb temperature of the air indicates it's total heat and is an exact measure of both the heat of air and of the water vapor. The latter has three components, heat of the liquid, heat of vaporization and super heat.

Effective temperature is an experimentally determined temperature. It is a true measure of our personal comfort as produced by the correct combination of dry- and wet-bulb temperatures, relative humidity, and air motion.

Entering temperature differential or "spread" indicates the difference in temperature between the room air and the entering conditioned air. This difference is usually in direct proportion to the height of the room.

A word of caution—don't attempt temperature spreads greater than about 16° F. Use a minimum entering air temperature of 64° F. to produce a comfortable 80° room temperature.

Air distribution means the method of introducing conditioned air into an enclosure. The air is usually introduced through grilles located in the side wall close to the ceiling, or pan diffusers which extend through the ceiling. Return or exhaust air can be removed through grilles placed in the side wall, usually near the floor.

Differential control designates a system of automatic temperature control. It permits the inside temperature to be balanced and varied with the outside temperature. Normally, a maximum range of 15° F. is maintained. When the outside temperature is 95° F., the inside could be set at 80° F. And as the outside temperature drops, the inside could be reduced proportionately, to say 72° F. minimum.

How Air Conditioning Is Accomplished

The production, regulation, and control of indoor climate was made possible through the application of special mechanical equipment. Let us start with the first of the four fundamentals which this equipment need produce and maintain. For temperature—some form of neat interchanger is required to produce or absorb heat—a warm surface for heating, and a chilled surface for cooling and dehumidifying. Our air supply could thus be heated, cooled, or dehumidified.

Next, we would require some device for the winter humidification. For air purity, some form of air washer or filter would be necessary. For air motion a fan would be required to blow or draw the air through our air conditioner and to distribute the air.

In the process of dehumidification, we reduce a given quantity of air to a fixed dew point. By this expedient, we control and regulate the absolute humidity by condensing the excess water vapor or moisture. As the temperature of this air is relatively low, it must be heated. Mixing with warm room air will accomplish this.

For example, assume we dehumidify 100 cu. ft. of air to a dew point of 50° F. We then mix say another 100 cu. ft. of 80° room air with this 50° dew-point air. We now have a total volume of air of 200 cu. ft. at approximately 65° F.

This gives us a spread of 15° F. (80—65) which would normally be satisfactory for air conditioning. Mixing dehumidified air with the warm re-used room air, or heated air, is one of the basic methods employed in present-day air-conditioning equipment.

We speak of that portion of air used to temper or re-heat the dehumidified air as *by-passed air*. Incidentally, this is the basic claim of the so-called by-pass patents. Proper mixing of air is the basis of all modern air-conditioning equipment.

In general there are four distinct methods of producing effective cooling:

1. Lower the dew-point temperature, which reduces the moisture content.
2. Lower the dry-bulb temperature, which extracts the sensible heat.
3. Increase the air motion.
4. Increase the wet bulb or moisture content. (This can only be accomplished effectively when we have very dry, high-temperature air.)

Systems which employ the dew-point method of cooling automatically reduce the dry-bulb temperature as well. And, as explained previously, we then mix a portion of this dew-point air with warm re-used air. Complete air-conditioning results.

Streamlined Train to Be Air Conditioned

CHICAGO—Air conditioning in all compartments will provide added comfort to passengers on the streamlined "Zephyr" train now being built at Philadelphia by the Edward G. Budd Mfg. Co. and which will be turned over to its owners, the Chicago, Burlington & Quincy Railroad on or about April 16.

Windows in all compartments are sealed and temperatures are to be thermostatically controlled. The air-conditioning apparatus is located under the respective passenger compartments.

The "Zephyr" is electrically driven by equipment supplied by the General Electric Co. A generator which supplies power to the motors is driven by an 8-cylinder 600-hp. two-cycle Diesel engine that uses heavy non-explosive oil as fuel. The engine was developed especially for this train by the Winton Engine Corp., a division of General Motors. Without spark plugs or an ignition system of the sort used in gas engines, combustion is accomplished wholly through compression.

Radio City Building Uses Auditorium System

NEW YORK CITY—An air-conditioning system for the British Empire building in Radio City of Rockefeller Center here has just been installed by Baker, Smith & Co., special agent for Auditorium air-conditioning systems. This installation includes American Blower dehumidifiers, air-mixing boxes, and Sirocco diffusers. Clyde R. Place was the engineer for this installation, while Baker, Smith & Co. was the general contractor.

American Blower Cools Civic Auditorium

GRAND RAPIDS, Mich.—American Blower air-conditioning equipment is being installed in the Grand Rapids Civic Auditorium here. The apparatus includes American Blower fans and type C surface coolers. Architect for the job is Robinson & Campeau, while Burritt A. Parks is the engineer, and Owen, Ames & Kimbel Co. is the general contractor.

Oklahoma City Hotel Installs Air Coolers

OKLAHOMA CITY—Installation of an Auditorium air-conditioning system is being completed by the American Blower Corp. in the Oklahoma Biltmore hotel here. Hawk & Parr was the architect, Louis Loeffler the engineer, and Reinhart & Donovan the general contractor.

G-E Opens Series of Air-Conditioning Schools

NEW YORK CITY—Engineering training schools for sales engineering directors of dealer organizations were conducted in New York and Chicago during March by the air-conditioning department of the General Electric Co.

The schools were designed primarily to help the sales engineering directors pass on to their men a complete story on cooling and air-conditioning units and systems.

Included in the topics considered were: air conditioning and human comfort; cooling equipment—unit and central systems; heat gain calculations; application problems; and selling cooling and air conditioning.

Among those who attended the school at New York were: W. M. Johnston, J. D. Newman, W. H. Wheeler, C. L. Ewing, D. Cooper, G. F. Evans, J. J. Way, and B. Allen of Schwerin Air Conditioning Corp., New York City; and C. R. Baugh of the same company at Mt. Vernon, N. Y.

C. E. Hendricks, C. Knopf, L. S. Katz, and E. C. Hach of Gene Meehan, Inc., Brooklyn; L. F. Hammerstein, Phillips & Ibsen, Inc., Nyack, N. Y.; I. Jalonack of A. L. Hart, Patchogue, N. Y.; J. E. Broderson, Strain & Sutton, Poughkeepsie, N. Y.

F. Ibsen and T. C. Lawrence of J. H. Christensen, Inc., Binghamton, N. Y.; F. J. Kalteaux, Kalteaux Bros. Co., Schenectady, N. Y.; M. P. Brandel, A. Goodenouf, and Wendell Westover, Westover-Wolfe, Inc., Albany, N. Y.; H. C. Ling, Glens Falls, N. Y.; R. H. Fish of A. Wayne Merriam, Inc., Utica, N. Y.; L. H. Skougor, Hamlin Air Conditioning Corp., Buffalo.

H. G. McCullough of S. S. Fretz, Jr., Inc., Philadelphia; J. S. Farrill, Ochiltree Electric Co., Pittsburgh.

G. W. Gross, J. K. Baker, and H. P. Zerfass, Air Conditioning Corp., Newark; W. H. Ticehurst, Air Conditioning Corp. of Monmouth County, Red Bank, N. J.; J. Milinard, W. R. Thropp & Sons Co., Trenton, N. J.

M. F. O'Brien, Smith-Cunningham, Inc., New London, Conn.; T. A. Webb and A. Graham, Smith-Cunningham, Inc., New Haven, Conn.; D. J. Slack and J. F. Lee, Automatic Appliance Corp., Stamford, Conn.; S. L. Willson and E. B. Lovewell of Sumner L. Willson, Hartford, Conn.; H. B. Waterman, L. C. Kelley Sales Co., Bridgeport, Conn.; J. J. Fitzgerald, M. J. Daly & Sons, Inc., Waterbury, Conn.

E. A. Wagner, C. J. Trudell, and E. H. Donovan, Wagner-Weeks Corp., Pittsfield, Mass.; M. H. Bridge and P. A. Cutler, Bridge Air Conditioning Corp., Springfield, Mass.; E. D. Jones and C. H. Breidenthal, Sawyer's, Inc., Worcester, Mass.; R. Hanner of Frank E. Deeley, Holyoke, Mass.; and B. H. Wahlin, Hawes Electric Co., New Bedford, Mass.

Other two-day sessions will be held at Boston, Schenectady, Philadelphia, Richmond, Cleveland, Minneapolis, Omaha, Kansas City, and St. Louis.

On the first day of these meetings the dealers and sales managers will discuss policies and plans with the sales and advertising representatives of the air-conditioning department. These meetings will be round-table discussions.

On the second day all salesmen of dealers will attend a dramatic presentation of the promotional plans.

At the regional meetings the air-conditioning department will be represented by Mr. Donovan; E. J. Opal, merchandising manager; W. A. Bowe, advertising manager; A. C. Roy, merchandise promotion; W. A. Scherff, oil furnace sales; R. S. Thurston, air-conditioning sales; H. B. Smith, gas furnace sales; and E. C. Lewis, new construction.

Starr Co. Increases Output, Adds Men

(Concluded from Page 1, Column 2)

models, ranging in net storage capacity from 2.85 to 17.8 cu. ft.

Cabinet appearance of the '34 line is the same as that of 1933 models, except that new chromium hardware and crested nameplates are being used.

Evaporators in '34 models are of the dry expansion type, and the cold control is located on the evaporator front, instead of on the cabinet exterior.

Twin-cylinder compressors are used in all but the two smallest models, which have single-cylinder machines. Leland and Howell motors are used.

Smallest of the line is model T, with a net capacity of 2.85 cu. ft. Available only in lacquer exterior, its list price f.o.b. factory is $99.50 (all prices quoted on this basis).

Model R's net capacity is 4 cu. ft., its shelf area 9 sq. ft. It supplies 56 cubes at a freezing in its two trays. Price of this model in lacquer is $124.50, in porcelain, $147.50.

Featured model of the Starr-Freeze line is the M, distinguished by a centered evaporator and diamond-web type shelves. Its capacity is 6.1 cu. ft., its shelf area, 13 sq. ft. In lacquer, its price is $179.50, $209.50 in porcelain.

The Q, smallest two-door model, has a 7.18-cu. ft. net capacity, and an 11.75-sq. ft. shelf area. Its five ice trays make 140 cubes per freezing. Price of this model in lacquer is $235, in porcelain, $280.

Next is model F, with a net storage space of 8.9 cu. ft., selling for $285 in lacquer exterior, $350 in porcelain. Model C has a 12.1-cu. ft. capacity, and in lacquer sells for $425, in porcelain, $525.

Largest of the line is model H, which has a net capacity of 17.8 cu. ft. Finished in lacquer, this refrigerator is priced at $630, while the all-porcelain model sells for $730.

The company is also in production on five lines of commercial machines.

Its J line comprises eight models of both the air- and water-cooled type, in ⅛-hp. and ½-hp. sizes, with a capacity range of from 117 to 229 lbs. I.M.E. per 24 hours. Half of the models use sulphur dioxide, the other half, methyl chloride.

In the A line are six models, some air cooled and some water cooled. They range in size from ⅛ to 1/5 hp., and in I.M.E. from 80 to 215 lbs. per 24 hours. Some use methyl chloride as the refrigerant, the others, SO_2.

Fourteen models, from ¼ to ¾ hp. in size, make up the Starr-Freeze B line. Like the other lines, these models are divided between air and water cooling and use of sulphur dioxide and methyl chloride. Their I.M.E. range is from 253 to 780 lbs.

Size of the D line's 13 models ranges from ½ to 1½ hp., with their I.M.E. range from 444 to 1,558 lbs. In this line are some air-cooled and some water-cooled models — some using methyl, and some, sulphur.

Last is the E line, composed of eight units with a size range from 1½ to 3 hp. There are air- and water-cooled models, with some using SO_2, the others, methyl chloride.

Newest of this manufacturer's commercial units is one designed particularly for use with milk coolers. It is cooled by both air and water, the latter circulating by counterflow through the unit's water-cooled head.

The unit has an I.M.E. of 3,500 lbs. per 24 hours, and may be used with a 3- to 5-hp. motor. Its receiver tank is located beneath the base of the compressor.

Detroit Lubricator and Penn controls are used on the company's commercial units. Cutler-Hammer controls are standard on household units.

Starr Co. also manufactures a line of six bottle coolers of the sweet water-bath type. Their capacity ranges from 70 to 168 bottles. All are of self-contained construction—the condensing unit being an integral part of the cooler.

Another Starr product is a line of double-duty display cases, made in standard sizes ranging from 6 to 12 ft. They are so designed that the condensing unit may be installed either in the case, or remotely.

Each case has two dry-expansion finned coils. The cases are available in either porcelain or lacquer finish.

The company manufactures a line of wall-type service refrigerators, too, ranging in net storage capacity from 12 to 128 cu. ft., and a five-model line of water coolers, with capacities of from one to 30 gals. per hour.

Bureau Estimates 82,439 Units Sold in February

(Concluded from Page 1, Column 5)

five states exceeded 100 per cent of quota for the two months, Kansas and Oklahoma being far ahead with 230.9 per cent and 224.7 per cent, respectively.

New York lead all other states in sales with a volume of 17,196 units, while Pennsylvania ranked second with total sales of 11,386 units. Illinois with 8,341 and Michigan with 4,938, respectively, were third and fourth.

States in the southeastern division of the country were most uniform in percentage of quota realization, the figures ranging between 123.3 per cent for Florida and 190 per cent for Georgia. Quota realization was lowest in the New England states, Rhode Island being the only state to exceed the quota set by the Bureau.

The tabulation which follows shows the state quotas set by the Bureau, estimated sales by states for the two-months period, and percentage of quota realization.

	*Two Months Quota	Estimated Total Sales	% Quota Realization
New England Division			
Connecticut	1,924	1,532	79.6
Maine	790	567	71.7
Massachusetts	4,922	4,020	81.6
New Hampshire	510	275	53.9
Rhode Island	807	907	112.3
Vermont	331	239	72.2
Eastern Division			
Delaware	205	307	149.7
Maryland & D. C.	2,032	3,340	164.4
New Jersey	4,920	4,781	97.1
New York	15,479	17,196	111.0
Pennsylvania	8,668	11,386	131.3
East Central Division			
Kentucky	1,129	1,713	151.7
Ohio	6,471	7,288	112.6
West Virginia	797	1,388	174.1
Middle West Division			
Iowa	1,901	2,189	115.1
Kansas	1,413	3,264	230.9
Missouri	2,782	4,860	174.6
Nebraska	978	1,174	120.0
Pacific Coast Division			
Arizona	292	421	144.1
California	7,870	4,670	59.3
Nevada	71	50	70.4
North West Division			
Idaho	330	469	142.1
Montana	355	518	145.9
Oregon	1,001	1,497	149.5
Utah	486	424	87.2
Washington	1,803	1,470	81.5
South Eastern Division			
Alabama	719	1,254	174.4
Florida	979	1,208	123.3
Georgia	831	1,579	190.0
North Carolina	1,095	1,539	140.5
South Carolina	436	690	158.2
Tennessee	978	1,554	158.8
Virginia	1,103	1,711	155.1
Great Lakes Division			
Illinois	7,715	8,341	108.1
Indiana	2,827	3,692	130.5
Michigan	4,439	4,938	111.2
Wisconsin	2,618	2,101	80.2
North Central Division			
Minnesota	1,979	2,009	101.4
North Dakota	251	260	103.5
South Dakota	322	616	191.3
Rocky Mountain Division			
Colorado	842	942	111.8
New Mexico	139	202	145.3
Wyoming	131	216	164.8
Southwestern Division			
Arkansas	455	776	170.1
Louisiana	821	792	96.1
Mississippi	357	329	92.1
Oklahoma	1,053	2,367	224.7
Texas	2,690	4,590	170.6
Totals	**101,050**	**117,651**	**116.4**

*10% of year's quota.

Fedders Manufactures Steel Beer Keg

(Concluded from Page 1, Column 5)

from the brewery to the dispensing station.

At each end of the keg is a saucer-like cradle which supports the inner container from the outer shell. These cradles are also insulated, Mr. Gregg points out, the only metal-to-metal contact between the inner and outer shell being the small area around the center of the "belly" and at points where the filling and tapping bungs are attached.

The inner container is electric seam welded around the circumference of the belly, and then arc-welded to the outer container. Inner containers are lined with pitch so that the beer never comes in contact with steel.

A special feature of the Fedders keg is the deep concave "chime" around the top and bottom.

Another feature of steel beer kegs is the fact that they give off no moisture to be deposited in electrically refrigerated cooling surfaces.

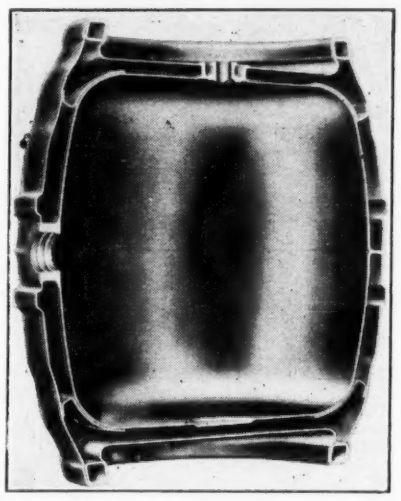
Kelvinator Ships 75,885 Units in 6 Months

(Concluded from Page 1, Column 5)

responding month of 1933, eclipses the best previous March record of 16,143 units established in March of 1930.

Pointing out that this record was established during a period of the year which normally sees only the beginning of the heavy period of the selling season, H. W. Burritt, vice president in charge of sales, expressed the opinion that the Kelvinator figures are another definite indication that the present year will prove to be a new high point in the electric refrigeration industry.

Fedders Beer Keg



Cutaway view shows the air-space insulation.

The deep concave 'Chimes' on the ends provide a non-slip grip.

Food Retailers Will See Frigidaire Movie

(Concluded from Page 1, Column 1)

ing foods, beverages, groceries, and meats employed by some of the outstanding men engaged in these occupations," declares W. D. McElhinny, commercial sales manager of Frigidaire Corp.

"Cameramen were sent into every section of the nation to record in film the merchandising activities of successful restaurant operators, hotel managers, grocers, butchers, delicatessen owners, beverage dispensers and others who keep the nation well fed."

Scenes from the sound motion picture show successfully operated food retailing establishments in all parts of the country.

The film opens with an introduction showing the importance of food in life, and how Americans spend, on the average, approximately 38 cents out of every dollar for food.

The scene shifts to the main dining room of the Waldorf-Astoria in New York City, where Oscar explains how food is kept fresh in the Waldrof kitchens and serving pantries.

Another scene has John P. Harding of Chicago's well-known restaurant chain explaining how beer should be cooled and served, while the movie shows kegs being rolled into the Harding cellars, and bartenders drawing beer.

Other restaurants shown in the picture are the Fred Harvey chain, the rough and ready Gem at New Orleans, the Triangle in Chicago, Antoine's in New Orleans, Patten's in Boston, Stauffer's in Cleveland, the unique Wigwam on the famed Woodward Ave. superhighway in Detroit, and Hackney's at Atlantic City.

Several scenes are also shown of the latest type of retail food stores.

15 Manufacturers Sell 75,007 Household Refrigerators in February, 1934

Member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) include Apex, Crosley, Frigidaire, General Electric, Gibson, Grigsby-Grunow, Kelvinator, Merchant & Evans, Norge, Potter, Servel, Stewart-Warner, Sunbeam, Trupar, Uniflow, Universal Cooler, Westinghouse, and Wurlitzer.

HOUSEHOLD Lacquer (Exterior) Cabinets With Systems	Domestic Sales Quantity	Domestic Sales Value	Canadian Sales Quantity	Canadian Sales Value	Other Foreign Sales Quantity	Other Foreign Sales Value
1. Under 4.00 cubic feet..	755	$ 44,060	....	$	104	$ 6,836
2. 4 to 4.99 cubic feet..	17,936	1,130,641	136	8,286	2,666	182,516
3. 5 to 5.99 cubic feet..	8,730	668,336	40	3,279	318	24,641
4. 6 to 6.99 cubic feet..	9,722	840,168	34	3,063	319	29,191
5. 7 to 7.99 cubic feet..	6,863	707,277	21	2,368	235	25,949
6. 8 to 9.99 cubic feet..	247	30,715	....	....	46	6,425
7. 10 to 12.99 cubic feet..	21	3,713	....	....	....	....
8. 13 to 24.00 cubic feet..	12	2,327	....	....	1	221
9. Total Lacquer	**44,286**	**3,427,237**	**231**	**16,996**	**3,689**	**275,779**
Porcelain (Exterior) Cabinets With Systems						
10. Under 4.99 cubic feet..	1,076	88,313	....	....	195	16,852
11. 5 to 5.99 cubic feet..	1,963	177,453	....	....	116	10,983
12. 6 to 6.99 cubic feet..	7,931	870,068	3	343	231	24,968
13. 7 to 7.99 cubic feet..	6,469	802,067	5	605	296	36,480
14. 8 to 9.99 cubic feet..	2,448	334,046	6	916	135	18,235
15. 10 to 12.99 cubic feet..	438	73,676	1	169	107	18,282
16. 13 to 24.00 cubic feet..	215	45,174	1	211	58	12,226
17. Total Porcelain	**20,540**	**2,390,797**	**16**	**2,244**	**1,138**	**138,026**
18. Total Lines 9 and 17...	**64,826**	**5,818,034**	**247**	**19,240**	**4,827**	**413,805**
19. Separate Systems	4,191	182,105	2	93	531	29,213
20. Separate Household Low Sides	232	4,509	12	768	139	3,035
21. Total Lines 18, 19, 20...	**69,249**	....	**261**	....	**5,497**	....
22. High Sides, ¼ hp. or Less	281	13,039	31	1,573	1,446	78,706
23. Cabinets—No Systems..	175	6,680	....	....	3	207
24. Total Household.....	....	**6,024,367**	....	**21,674**	....	**524,966**
COMMERCIAL						
25. Water Coolers with High Sides	342	33,135	4	318	35	3,690
26. Water Coolers with No High Sides	45	2,315	....	....	....	....
27. Ice Cream Cabinets with High Sides	79	10,511	2	136	54	7,631
28. Ice Cream Cabinets with No High Sides....	56	7,121	1	63	23	3,325
29. Beverage Coolers with High Sides	113	7,587	2	121	....	....
30. Beverage Coolers with No High Sides.....	108	5,717	....	....	15	683
31. Room Coolers with High Sides	2	670	....	....	....	....
32. Room Coolers with No High Sides.....	54	6,514	1	139	20	2,197
Extra High Sides						
33. ⅓ to ½ hp. Incl.....	925	60,289	15	1,241	1,614	124,993
34. Above ½ to 1 hp. Incl...	569	59,158	23	2,841	721	92,367
35. Above 1 to 5 hp. Incl....	269	38,380	4	548	161	28,830
36. Above 5 to 10 hp. Incl...	25	34,529	....	....	19	9,411
37 Above 10 hp.....	....	....	....	....	....	....
38. Total Lines 33, 34, 35, 36 and 37.....	**1,788**	....	**42**	....	**2,515**	....
39. Total Lines 25, 27, 29, 31, and 38	**2,324**	....	**50**	....	**2,604**	....
40. Extra Commercial Low Sides	3,034	111,432	103	3,367	933	32,271
41. Miscellaneous Cases and Cabinets	....	10,099	1	100	4	1,163
42. Total Commercial	....	***387,457**	....	**8,374**	....	**†306,561**
43. Totals—Household and Commercial	....	***$6,411,824**	....	**$ 30,548**	....	**†$831,527**

†One member company did not report in breakdown form. Therefore we have added their totals to the report as follows: Line 42—$310,761. Line 43—$835,727.

*Two companies did not report in breakdown form, therefore we have added their totals to the report as follows:

	Domestic Sales Value	Distributor Quantity	Distributor Value	Production Quantity
Line 9	$	35,503	$2,839,820	28,114
Line 17	....	13,823	1,601,375	20,191
Line 18	....	49,326	4,441,195	48,305
Line 21	....	50,146	....	88,824
Line 24	....	....	4,488,444	....
Line 39	....	....	....	6,398
Line 42	431,885	....	898,159	....
Line 43	6,456,252	....	5,386,603	....

Nema Companies Make 88,387 Refrigerators in February

HOUSEHOLD Lacquer (Exterior) Cabinets with Systems	U. S. A. INVENTORIES Factory, Branch, & Warehouse Quantity	Factory, Branch, & Warehouse Value	Distributors Quantity	Distributors Value	Dealers Quantity	Dealers Value	Production Quantity
1. Under 4.00 cubic feet.....	364	$ 18,841	610	$ 34,304	2	$ 128	229
2. 4 to 4.99 cubic feet.....	61,331	4,120,466	11,538	745,206	7,791	489,546	13,362
3. 5 to 5.99 cubic feet.....	18,917	1,478,636	7,034	525,010	3,081	230,406	2,427
4. 6 to 6.99 cubic feet.....	17,202	1,432,791	7,504	662,750	6,984	621,069	5,964
5. 7 to 7.99 cubic feet.....	19,560	2,127,735	4,308	448,414	3,214	355,010	4,523
6. 8 to 9.99 cubic feet.....	911	114,252	281	38,514	165	23,255	1,325
7. 10 to 12.99 cubic feet.....	317	61,719	160	30,123	100	18,260	4
8. 13 to 24.00 cubic feet.....	150	29,485	68	16,179	14	3,349	....
9. Total Lacquer	**118,752**	**9,383,925**	***31,503**	***2,500,500**	**21,351**	**1,741,023**	***27,834**
Porcelain (Exterior) Cabinets with Systems							
10. Under 4.99 cubic feet.....	13,399	1,194,240	1,007	90,089	1,202	104,589	2,260
11. 5 to 5.99 cubic feet.....	3,536	351,556	1,437	140,080	662	63,050	1,361
12. 6 to 6.99 cubic feet.....	9,303	991,546	3,604	421,037	3,576	401,007	6,625
13. 7 to 7.99 cubic feet.....	18,081	2,284,760	3,482	449,009	3,945	496,305	6,421
14. 8 to 9.99 cubic feet.....	5,074	694,902	1,228	173,097	1,465	198,946	2,481
15. 10 to 12.99 cubic feet.....	1,522	260,225	288	50,781	376	64,538	784
16. 13 to 24.00 cubic feet.....	1,140	252,005	277	65,207	142	32,100	102
17. Total Porcelain	**52,055**	**6,029,234**	***11,323**	***1,389,300**	**11,368**	**1,360,535**	***20,034**
18. Total Lines 9 and 17.....	**170,807**	**15,413,159**	***42,826**	***3,889,800**	**32,719**	**3,101,558**	***47,868**
19. Separate Systems	9,964	425,144	404	16,492	....	....	8,720
20. Separate Household Low Sides	15,278	231,507	416	7,710	224	4,070	31,799
21. Total Lines 18, 19, and 20.....	**196,049**	....	***43,646**	....	**32,943**	....	***88,387**
22. High Sides, ¼ hp. or Less.....	7,664	354,832	253	13,690	214	10,273	31,691
23. Cabinets—No Systems	69,552	3,547,946	92	9,357	28	2,746	47,871
24. Total Household	....	**19,972,588**	....	***3,937,049**	....	**3,118,647**	....
COMMERCIAL							
25. Water Coolers with High Sides.....	7,707	760,674	2,101	222,573	453	43,348	414
26. Water Coolers with No High Sides.....	2,600	90,781	58	2,544	23	1,007	74
27. Ice Cream Cabinets with High Sides.....	3,722	582,612	102	24,042	6	1,238	434
28. Ice Cream Cabinets with No High Sides.....	4,680	581,932	235	21,999	14	1,633	319
29. Beverage Coolers with High Sides.....	1,785	124,875	288	15,640	235	14,440	69
30. Beverage Coolers with No High Sides.....	492	24,468	138	6,636	42	1,950	....
31. Room Coolers with High Sides.....	....	....	1	523	....	....	2
32. Room Coolers with No High Sides.....	1,253	139,933	263	25,284	81	7,288	8
33. Extra High Sides, ⅓ to ½ hp. Incl.....	9,869	966,066	1,413	134,416	430	34,277	2,834
34. Extra High Sides Above ½ to 1 hp. Incl.....	3,656	513,626	721	97,000	228	30,122	1,581
35. Extra High Sides Above 1 to 5 hp. Incl.....	1,656	344,768	466	98,862	142	27,545	557
36. Extra High Sides Above 5 to 10 hp. Incl.....	25	13,286	1	700	....	....	47
37. Extra High Sides Above 10 hp.....	....	....	....	....	....	....	....
38. Total Lines 33, 34, 35, 36, and 37.....	**15,206**	....	**2,601**	....	**800**	....	**5,019**
39. Total Lines 25, 27, 29, 31, and 38.....	**28,420**	....	**5,093**	....	**1,494**	....	***5,938**
40. Extra Commercial Low Sides.....	26,332	849,138	3,995	140,791	1,171	34,376	5,064
41. Miscellaneous Cases and Cabinets.....	....	266,745	....	69,319	....	12,640	9
42. Total Commercial	....	**5,258,904**	....	***860,329**	....	**209,864**	....
43. Totals—Household and Commercial.....	....	**$25,231,492**	....	***$4,797,378**	....	**$3,328,511**	....

*See explanation in columns 1 and 2.

Nema Group Sells 109,521 Units in Jan.-Feb.

(Concluded from Page 1, Column 5)

total of 75,007 household jobs, 69,249 being sold in the United States.

Last year manufacturers worked under the handicap of a very mediocre first quarter start, but still managed to close the year with the highest sales volume ever attained in any twelve-months period. With the advantage of a record first-of-the-year start, the manufacturers have a fine opportunity to make 1934 at least as successful as was 1933.

With the addition of seven new companies during 1933, the Nema membership now includes 17 manufacturers of electric refrigerators. The 1934 membership is as follows: Apex, Crosley, Frigidaire, General Electric, Gibson, Kelvinator, Merchant & Evans, Norge, Potter, Servel, Stewart-Warner, Sunbeam, Trupar, Uniflow, Universal Cooler, Westinghouse and Wurlitzer. In 1933 these companies were responsible for approximately 88 per cent of all industry sales.

The Nema report form to be issued monthly in 1934 differs from that used in 1933 in that it has been expanded to show more complete and detailed breakdowns. Sales are tabulated according to their distribution—domestic, Canadian, or other foreign. In other words, domestic sales are shown separately from exports.

Another new feature is the inclusion of a detailed record of the monthly production of refrigeration products by Nema members.

The sales by states as reported by Nema members for February follow:

States and Territories	Quantity of Household Low Sides
Alabama	932
Arizona	261
Arkansas	489
California	2,665
Colorado	426
Connecticut	869
Delaware	195
District of Columbia	597
Florida	805
Georgia	1,073
Idaho	354
Illinois	4,958
Indiana	2,329
Iowa	1,477
Kansas	2,466
Kentucky	1,017
Louisiana	528
Maine	297
Maryland	1,542
Massachusetts	2,268
Michigan	2,690
Minnesota	1,245
Mississippi	204
Missouri	2,953
Montana	407
Nebraska	668
Nevada	29
New Hampshire	153
New Jersey	2,542
New Mexico	116
New York	8,291
North Carolina	987
North Dakota	171
Ohio	4,248
Oklahoma	1,616
Oregon	932
Pennsylvania	7,044
Rhode Island	479
South Carolina	357
South Dakota	397
Tennessee	1,018
Texas	2,655
Utah	290
Vermont	134
Virginia	1,098
Washington	887
West Virginia	844
Wisconsin	1,086
Wyoming	151
U. S. Miscellaneous	9
Total United States	**69,249**
Total Canada	261
Other Foreign (Including U. S. Possessions)	5,497
Total for World	**75,007**

PATENTS

Issued March 20, 1934

1,951,336. PROCESS AND APPARATUS FOR HEAT EXCHANGE BETWEEN TWO CURRENTS OF GAS. Edmund Altenkirch, Neuenhagen, near Berlin, Germany, assignor, by mesne assignments, to The Hoover Co., North Canton, Ohio, a corporation of Ohio. Application November 27, 1929, Serial No. 410,020. In Germany November 30, 1928. 9 Claims. (Cl. 62—119.5).

7. In an apparatus suitable for use in an absorption refrigerating system a warm gas conduit and a cold gas conduit in heat exchange relation with each other, means for conducting liquid from the warm gas conduit to the cold gas conduit while preventing the flow of gases from one conduit to the other, means for supplying a warm gas laden with a condensible fluid to the warm gas conduit, means for supplying a cold gas to the cold gas conduit, the arrangement of said conduits and said liquid conducting means being such that as the warm gas in the warm gas conduit gives up heat to the cold gas in the cold gas conduit, the condensible fluid in the warm gas will condense and flow through said liquid conducting means into said cold gas conduit and thus into the presence of cold gas therein, the arrangement of said conduits and said liquid conducting means also being such that the condensed fluid in the cold gas conduit is maintained at a higher temperature than the cold gas therein by the direct transfer of heat from the warm gas in the warm gas conduit to the condensed fluid in the cold gas conduit, independently of, and in addition to the transfer of heat from the warm gas to the cold gas, to thereby cause the condensible fluid in the cold gas conduit to evaporate into the cold gas therein.

1,951,365. FREEZING APPARATUS. Clifford Morrow, Canton, Ohio, assignor to The H. H. Miller Industries Co., Canton, Ohio, a corporation of Ohio. Application December 29, 1930. Serial No. 505,319. 20 Claims. (Cl. 62—114.)

1. The method of operating a freezer driven by an electric motor which consists in measuring the increase of current consumption of said motor as the freezing operation takes place, using this measure to cause the discharge of the freezer and using the measure of resulting decrease in current consumption to stop the discharge from the freezer and refill the latter with a new batch.

20. The method of operating an electric driven freezer having a material container, which consists in first measuring the increasing current consumption of the motor as the freezing of the material takes place and cutting off the supply of refrigeration in response to a predetermined light-sensitive device the characteristic increase in permeability to light of the completion of the freezing of the material to cause the discharge of the material.

1,951,412. PROCESS AND APPARATUS FOR PREPARATION OF FROZEN COMESTIBLES. Herbert M. Hill, Leonia, N. J. Application February 23, 1929. Serial No. 342,133. 21 Claims. (Cl. 62—114.)

1. The method of preparing a frozen confection, which consists in disposing the substance to be frozen in heat interchange relation with respect to a surrounding heat abstracting medium, propelling both the medium and the substance through a continuous undulatory course relative to each other, and crushing the substance as it is frozen at substantially the center of the space surrounded by said medium.

1,951,447. PROCESS OF AND APPARATUS FOR REFRIGERATION. August Schwarz, Chicago, Ill. Application April 18, 1930. Serial No. 445,390. 14 Claims. (Cl. 62—115.)

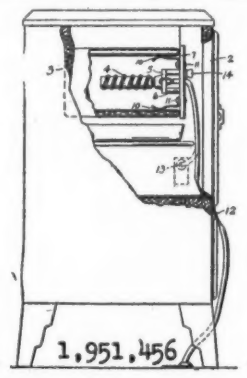
1. In a two stage refrigerator system and method for producing low temperatures by low condenser and suction pressures two refrigerator plants adapted to cooperate with each other, the condenser of the first plant being cooled by fresh water, a combination refrigerator and condenser tank consisting of a closed housing containing the refrigerator tubes of the second plant with brine passages therebetween, a by-path connecting the pipe line, leading from the fresh water cooled condenser, to the pipe conducting the liquid of low boiling point from the condenser tubes of the second plant to the refrigerator of the same plant, a second by-path connecting the suction line of the first plant with the suction line of the second plant, a valve adapted to prevent the entrance of the refrigerant into the refrigerator tubes of the first plant, another valve arranged in the suction line of the first plant before the junction of said line with the second by-path, a third valve inserted in the suction line of the second plant right behind the junction of the second by-path with said line, a fourth valve in the pipe conducting the liquid refrigerant of low boiling point to the refrigerator of the second plant and located between the outlet of the condenser pipes of the second plant and the first by-path and a pair of valves in each of said by-paths, one adjacent each end of each by-path.

1,951,448. MULTIPLE QUICK ACTING REFRIGERATOR PLANT AND PROCESS. August Schwarz, Chicago, Ill. Application April 2, 1932. Serial No. 602,862. 37 Claims. (Cl. 62—115.)

1. In a multiple quick acting refrigerator plant, a compressor, a high pressure condenser, a low pressure and low temperature condenser, a pipe connecting said two condensers, an expansion valve adjacent the entrance of the low pressure and low temperature condenser, a refrigerator, a pipe connecting the low pressure condenser with the refrigerator, an expansion valve adjacent the entrance of the refrigerator, a pipe connecting the refrigerator with the compressor, a pipe connecting the compressor with the high pressure condenser, and a closed refrigerator cycle, including a compressor, a condenser, an expansion valve and a refrigerator adapted to cool the low temperature and low pressure condenser.

1,951,456. REFRIGERATOR DEFROSTER. John H. Toy, Indianapolis, Ind. Application Sept. 22, 1932. Serial No. 634,337. 6 Claims. (Cl. 62—126.)

1. In a refrigerator having a superfreezing compartment open at one end, a removable door closing the open end of



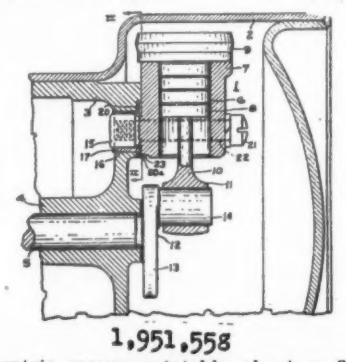
the compartment, an electric heating element supported within the compartment by the door and an electric circuit including said heating element.

1,951,496. REFRIGERATING APPARATUS AND METHOD. Charles L. Stevens, Norwood, Mass. Application September 5, 1931. Serial No. 561,328. 12 Claims. (Cl. 62—6.)

2. Refrigerating apparatus comprising a unit for increasing the pressure of a refrigerant, cooling means for abstracting heat from the refrigerant, and a cold unit through whcih heat passes to the refrigerant, said cold unit containing a body of congealable material capable of absorbing a large quantity of heat upon melting, whereby it affords refrigeration during a relatively long period, a time-responsive controlling instrumentality to effect the periodic operation of the pressure-increasing unit, a food compartment, and means between said compartment and cold unit to permit limited heat flow therebetween.

1,951,558. COMPRESSOR. Carl F. Nystrom, Springfield, Mass., assignor to Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application October 12, 1932. Serial No. 637,512. 8 Claims. (Cl. 230—238.)

1. A compressor comprising a cylinder, a head fixed to the cylinder, a piston arranged to reciprocate in the cylinder,



eccentric means rotatable about a fixed axis, means for connecting the piston and the eccentric means thereby providing the piston with a predetermined stroke, and supporting means for the cylinder including means for adjusting the distance between the cylinder head and the fixed axis of the eccentric means, said supporting means including a carrying member, a projection on said cylinder and a housing in said carrying member into which the projection is disposed, and said adjusting means comprising an eccentric bushing surrounding said projection and fitting snugly and turnably between the projection and said housing.

1,951,607. REFRIGERATOR PUMP. Victor Gideon, Chicago, Ill., assignor to Boyar-Schultz Corp., Chicago, Ill., a corporation of Illinois. Application April 9, 1932. Serial No. 604,185. 1 Claim. (Cl. 230—159.)

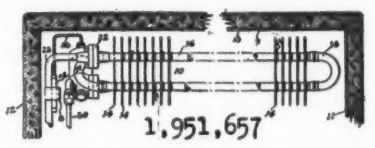
An oscillatory pump comprising an integral casing having an unobstructed cylindrical chamber therein, a vane in said cylinder oscillating about a fixed axis concentric with the axis of said chamber, removable inlet and outlet abutments inserted within said cylindrical chamber and occupying the space therein outside the path of movement of said vane, outlet connections and valves located in the outlet abutment in communication with an outlet passage through said casing wall, and inlet connections formed in the cylinder walls behind the inlet abutment, said connections overlapping the ends of the vane when in their extreme position against the inlet abutment but not so overlapping when the vane is in a forward or advanced position, whereby to provide an inlet for fluid in their extreme position and a cut off brought about by the movement of the vane to a forward position.

1,951,655. SUPPORTING MEANS FOR REFRIGERATING APPARATUS. Harold A. Greenwald, Detroit, Mich., assignor to Thomas C. Whitehead, Detroit, Mich. Application May 28, 1931. Serial No. 540,736. 10 Claims. (Cl. 62—116.)

1. In combination, a refrigerator cabinet having an upright part provided with an opening through which portable refrigerating apparatus may be inserted, and a support for such apparatus including an element permanently mounted in said cabinet, independently of said refrigerating apparatus for pivotal movement relative to said part.

1,951,657. REFRIGERANT VAPORIZER. Edward Heitman, Detroit, Mich., assignor to Kelvinator Corp., Detroit, Mich., a corporation of Michigan. Application February 17, 1931. Serial No. 516,329. 3 Claims. (Cl. 257—255.)

1. A refrigerant evaporator comprising a plurality of sectional units, each unit comprising a plurality of heat transfer



fins, a plurality of U-shaped refrigerant pipes projecting therethrough, and means for connecting the ends of adjacent pipes to form a continuous coil, means for rigidly and operatively connecting the sectional units together on the same horizontal plane comprising a plurality of larger heat transfer fins interposed at intervals between the sectional fins, all of the refrigerant pipes in each of the sectional units projecting through each of the said larger fins, and couplings for joining the open ends of the refrigerant pipes in each unit to the open ends of the pipes in the adjoining unit, and means for admitting refrigerant to an open extremity of one of the units.

1,951,679. REFRIGERATING APPARATUS. Samuel T. Sherrick, Denver, Colo., assignor of forty-nine one-hundredths to Charles Diehl, Denver, Colo., and fifty-one one-hundredths to S & C Holding Corp., Denver, Colo., a corporation of Colorado. Application November 3, 1930. Serial No. 493,098. 11 Claims. (Cl. 62—91.5.)

10. A refrigerator having a chamber to be refrigerated, and a refrigerating unit for the chamber, comprising a container having a space for solidified carbon dioxid, and means for reducing the cubic content of said space in ratio to the reduction of volume of the carbon dioxid.

1,951,758. METHOD OF AND APPARATUS FOR SUPPLYING CARBON DIOXIDE GAS. Charles L. Jones, Pelham, N. Y. Application April 15, 1930. Serial No. 444,416. 10 Claims. (Cl. 62—91.5.)

2. A method of supplying carbon dioxide gas for industrial purposes, which includes utilizing frozen carbon dioxide as a gas generating source passing the carbon dioxide gas which evaporates from said frozen mass through a valveless open conduit to the apparatus to be supplied, and regulating the rate of evaporation of the frozen carbon dioxide by and in accordance with the quantity of gas required in the region of use of the gas.

1,951,915. REFRIGERATING MACHINE. Emil Kagi, Winterthur, Switzerland, assignor to the firm Sulzer Freres Societe Anonyme, Winterthur, Switzerland. Application May 13, 1930. Serial No. 451,933. In Switzerland October 7, 1929. 1 Claim. (Cl. 62—115.)

A refrigerating machine employing a refrigerating liquid and a lubricant heavier than said liquid, comprising a main evaporator, a compressor, and means between said main evaporator and said compressor for returning the lubricant heavier than the refrigerating liquid, and the refrigerant, from said main evaporator directly to said compressor therefrom, said means including an injector located in the direct path between the outlet from the evaporator and the inlet to the compressor and having a pressure chamber and a suction chamber, a lubricant collector for collecting lubricant sinking by gravity and separating from the refrigerant, a discharge pipe connecting the separated lubricant in the bottom of said collector to the suction chamber of said injector, and a pipe leading directly from the pressure chamber of said injector directly to the compressor without passing through any intermediate apparatus, whereby the pressure in the discharge pipe from the said collector to said suction chamber is maintained lower than the pressure at the outlet end of the main evaporator and the oil is returned to the compressor without altering the evaporator temperature.

1,952,026. REFRIGERANT RECEPTACLE. Raymond A. Bennett, Cambridge, Mass., assignor to The Boothby Fibre Can Co., Boston, Mass., a corporation of Massachusetts. Application August 5, 1930. Serial No. 473,190. 3 Claims. (Cl. 62—91.5.)

1. A refrigerant package comprising a tubular body with end closures: a perforate wall dividing the interior of the tube into an upper compartment for cold-storage and a lower compartment within which refrigerant material may be placed, and from which cold gases can rise to said cold-storage compartment; and means fast on said wall and protruding thence for engaging and for centering on the axis a container which may be set in said cold storage compartment.

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